NATIONAL CAR BUILDER

VOLUME XI.
NUMBER 5.

DEVOTED TO THE INTERESTS OF RAILWAY ROLLING STOCK.

$1.00 PER ANNUM.
SINGLE NUMBERS, TEN CENTS.

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CONTENTS.

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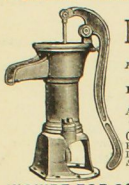

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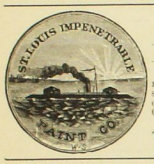

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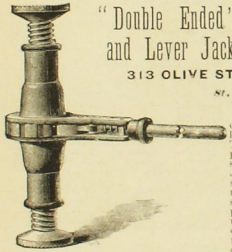

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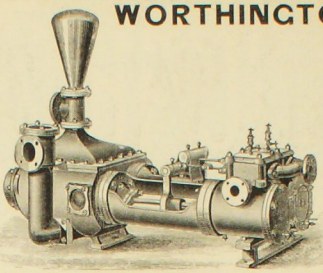

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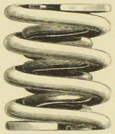

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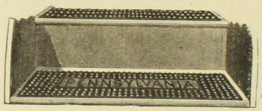

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For shafting and places where waste can not be used, mix the Compound with oil, and apply to the bearing. If the bearing be very hot, the first application may run off, but two or three applications will cool it.

When a journal is hot, don't cool it with water, but apply the Compound; **and no matter how hot it is, it will cool it while in motion.**

When you apply new bearings, fill them with the Compound before putting them on the axle, and pack the sides of the box next to the bearing with the Compound, and your boxes will run cool.

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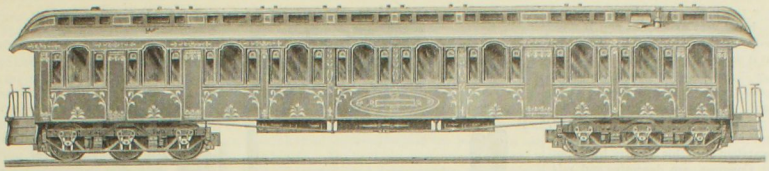

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Miscellaneous Items.

THE Harrisburg Car Co.'s planing mill and some small adjoining buildings were burned on the 10th of April. The loss is estimated at about $40,000; insurance $15,000.

THE Philadelphia & Reading shops, at Reading, Pa., are building 500 box cars and a large number of the new "schooner" coal cars. These are eight-wheel dump cars, 22 ft. long in the body and are expected to carry about 18 tons of coal.

THE Missouri Car & Foundry Co. is building 50 stock cars, 33 feet long, for the Missouri Pacific, 50 stock and 100 box cars for the M., K. & T., and 100 box and 50 stock cars for the Sioux City & Pacific.

THE Mowry Car & Wheel Works, of Cincinnati, are refusing contracts for building cars, but are doing a large business in car wheels and car and engine castings. They have a large contract for these with the Pittsburgh, Cincinnati & St. Louis Railway, and are shipping over 100 car wheels per day to various western roads.

THE Tiffany Refrigerator Car Company has now running over 400 of its cars in the transportation of beef, beer, poultry and fruits upon the various lines of railways.

AT the shops of the Wason Manufacturing Co., at Brightwood, Mass., 20 platform cars were put together in one day. The quickest time on any car was three hours, and the average a little over five hours to each car.

THE Helmbacher Forge & Rolling Mill, in St. Louis, recently forged and finished 150 car-axles in one day. The works are running full double turn and employ 450 men.

THE Cleveland & Pittsburg shops, in Cleveland, O., are building 250 gondolas to carry 20 tons each. They will turn out about 40 a month, besides doing the usual repair work.

BILLMEYER & SMALLS, at York, Pa., have recently shipped some very handsome passenger cars to the Denver & Rio Grande road.

THE Haskell & Barker Car Works, at Michigan City, Ind., are building 300 box cars for the Northern Pacific.

THE St. Charles (Mo.) Car Works are to build 500 freight cars for the St. Louis & San Francisco road.

THE Barney & Smith Manufacturing Co., at Dayton, Ohio, is to build 6 passenger and 2 parlor cars for the Northern Pacific.

THE Wason Car & Foundry Co., at Chattanooga, Tenn., is busy with car and foundry work for southern roads.

THE Cincinnati, Indianapolis, St. Louis & Chicago shops are building a number of new flat cars for the road, which are to carry 30,000 lbs. The road has a large business in stone from quarries on its line.

THE Rochester (N. Y.) Car Wheel Works, in order to meet the growing demand, have increased their capacity to 150 wheels per day. They are filling orders for a number of roads in this and other states.

THE Railway Speed Recorder Company, of Cleveland, O., has orders in hand from the Chicago & Rock Island, Union Pacific, and Michigan Central roads.

THE Detroit Car Spring Company has added a building, 75×125 feet, to their works, and increased their plant to a capacity of 300 sets of springs per day.

IT is said that the Pennsylvania Railroad Company is building at its Altoona shops a fast passenger engine to run between Philadelphia and New York, with 5 ft. 8 in. drivers. If it works satisfactorily, nine more of them will be built.

THE entire equipment for the new railway from New York to Rockaway Beach has been ordered and is now being constructed. The cars are being manufactured by the Jackson & Sharp Company and the Harlan & Hollingsworth Company, of Wilmington, Del., and Messrs Gilbert, Bush & Co., of Troy, N. Y. On all these cars the 42-inch wheel will be used.

THE Boston & Albany road is building a number of screw-lever dump cars for trial. They are of the ordinary long gondola pattern, the bodies pivoted on the trucks, the dumping arrangement consisting of two long shafts running the length of the car, upon which are drums or enlargements for winding up chains or wire ropes, by means of which the car-body is raised and tipped to one side or returned to its even position as required. The required motion is given to these shafts by gearing connecting with an upright shaft with a hand-wheel or crank on top, which is worked just as a brake-wheel would be. The advantages claimed are ease in dumping, also dumping on either side, and the use of long cars instead of short ones, if desired.

Two railway lines have recently been completed in Japan. The rails are of English make, but the rolling stock and engines have been ordered in America, the former being supplied with Westinghouse brakes, and the latter with spark arresters, a very proper precaution; for were a chance spark to light upon one of the shingle roofs by the side of the railway, whole villages would be swept away and a very natural feeling of hostility be developed against railway enterprise.

The large increase in travel to the west the present season has compelled the Chicago, Burlington & Quincy Railroad Company to further increase their already large passenger service by the addition of a fast train to Kansas City. It may also be stated in this connection that the company has under construction a new dining car surpassing anything yet seen in that line.

THE great project of tunneling the Hudson River between Jersey City and New York is now in active progress on the Jersey side. About seventy men are employed, and the work on the tunnel proper has already advanced over 100 feet from the main shaft. The width of the river is about 4,000 feet, and it is conjectured that in three years from now, ferry boats will not be required to enable people to pass from Long Island to New Jersey.

MESSRS. MERCHANT & CO., of Philadelphia, in order to afford increased accommodation to their growing business, are erecting a new four-story iron front building on Arch street, 25 × 85 feet, which, in connection with the present structure, will give a ground floor of nearly 300 feet to be used as a store, with office in second story. The firm are extensive importers and dealers in tin plates, metals, seamless brass and copper tubes, sheet copper and brass, galvanized sheet iron, etc. See advertisement.

THE Pennsylvania Railroad Company have recently built, at their Altoona shops, a number of passenger cars, with a new style of interior finish consisting of light-colored hard woods, the effect of which is a marked improvement upon the ordinary veneering. The ornamentation is what is known as the Queen Anne style, and is harmonious throughout. Oak decorated ceilings take the place of the old canvas head-linings, the basket-racks are of a new and tasteful pattern, and these, with the gas-brackets and other accessories, produce a very pleasing and artistic effect. The prevailing color of the wood-work being of a lighter tone than usual, gives to the car a cheerful and less sombre appearance, especially when lighted up in the evening. Altogether, it is a style of finish that commends itself for its neatness and elegance, and the absence of excessive elaboration for mere display. The seats are upholstered in plain plush of different colors, some of the cars having blue and others green. The windows are of fine French plate-glass, and of the standard size. The exterior is painted a rich maroon color, corresponding with most of the other day passenger cars of the road.

A FRENCH railway company is said to be trying a new method of heating on their express trains. It consists simply in the use of acetate of soda in the ordinary foot-warmers on French trains. This substance has considerable latent heat. Dissolving in a certain temperature, it thus absorbs a large quantity of heat, which becomes sensible during crystalization in cooling. All that is required is to fill the ordinary cases with a sufficient quantity of the acetate, close them and place them in a stove at about 100 degrees. The cooling of a case thus charged and heated takes from twelve to fifteen hours. The warmers are thereafter taken from the compartments and placed in a stove, where the crystals of soda acetate are re-dissolved, when the warmers are again ready for use. The new system has been tried on an express train leaving Paris at 7:15 and reaching Perrache at 4:31. The compartments were each supplied at starting with two warmers containing the acetate. At Perrache most of the warmers were still so hot that one

could not apply the back of the hand to them. Acetate of soda is not very expensive, and it could easily be manufactured in much larger quantities than at present if the demand required.

MR. CHARLES LATIMER, Chief Engineer of the New York, Pennsylvania & Ohio Railway, writes to the Cleveland (O.) *Leader*, warning the public, and especially mechanics and other workingmen, that the attempts now being made to introduce the French metric system into this country by a compulsory act of Congress, are deceptive and misleading, the petitions asking for such a law, as well as the books and pamphlets written in its favor, being so worded as to convey the idea that a decimal system of weights and measures corresponding to our money system is all that is asked for, when the real intention is to fasten upon us the entire French system, with its barbarous Greek and Latin names, unknown to our people and unsuited to our language.

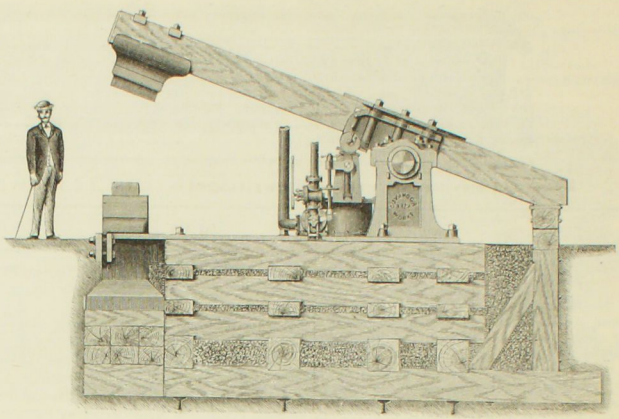
A WIRE-ROPE railroad has been completed to the very verge of the crater of Vesuvius—or nearly to the verge. A substantial stone fence runs along upon each side to keep the burning lava off the track during violent eruptions. Some portions of the up-grade, and down-grade also, are pretty steep, varying but a few degrees from perpendicular. To prevent the mountain from suddenly bulging out from internal pressure and wrenching the rail-joints, the upper part of the huge cone has been jacketed with ⅜-inch boiler iron, and the outer surface painted with fire-proof iron-clad paint. The ascent is made in eight minutes, running time. Oysters in every style, ice cream, pretzels and other delicacies can be obtained at the upper terminus. Next year, should no serious eruption interfere with the project, the present road will be extended over the edge of the crater, and a mile or two down into it, the preliminary surveys being already in progress. Etna, it is said, will be taken in hand next.

THE Chicago, St. Louis & New Orleans shops at McComb City, Miss., lately completed several fruit cars after a new model designed by Mr. F. R. Osborne, of the Southern Express Co. The cars are constructed with a view of securing perfect ventilation. There are spacious windows at either end of the car to secure a thorough draft. On either side are two windows, in addition to grating for doors. Near the floor at either end, the side of the car is pierced by two ventilators, 12 in. wide by 18 in. high, protected by perforated plates. Through these openings the air passes up through the packages stored within. A false bottom is laid over the flooring, which secures ventilation underneath, and guards against damage to the lower tiers by moisture.

MR. F. S. PEASE, of Buffalo, N. Y., has patented a new electrical apparatus for testing oils, which, it is claimed, obviates all the difficulties heretofore experienced, and meets the great want of a reliable test for refined petroleum oil under heat. The tests are always the same, and absolutely correct to the fraction of a degree. It determines the expansion of the oil, accounts for, corrects and measures it; also prevents the escape of the hydrocarbon vapor, and regulates and keeps the oil at a fixed height and exact distance to the point of combustion, all of which has never before been accomplished.

CAN an American locomotive, with five-foot drivers, travel a mile in sixty seconds?—*Railway Age.*

Undoubtedly it can, if the machine is in good order, the track level or down grade, and a maximum pressure of steam maintained. We are not so sure about it, however, if the locomotive should have a train of cars attached to it. A good deal would depend on the length and weight of the train.



HOLLOWAY'S STEAM HAMMER.

THE engraving represents a 4,000-pound steam helve hammer, manufactured by the Cuyahoga Steam Forge Co., of Cleveland, O., more generally known as the "Cuyahoga Works," and identified in the early times of railroading with the building of locomotives. The company is now engaged in the construction of heavy machinery, including high and low pressure, compound, marine and stationary engines, Bessemer steel works, blast furnaces, etc. Their steam hammer is in use at the forges of the Cleveland City Forge Co.; the Lake Erie Iron Co.; the Otis Iron & Steel Co., in Cleveland; the Troy (N. Y.) Steel Works; and at various other places. Owing to the superior construction and management of the steam cylinder and valve gear, including a patent steam balance valve, these hammers are considered by those who are using them as the most powerful and the most readily controlled of any in use. They are massive in proportions, and are said to be second to none in the quality of material and workmanship.

Friction and Traction.

Ever mechanic knows that friction is the resistance produced by the rubbing of the surfaces of two solid bodies against each other. Perhaps a better definition is "the resistance which the surface of one body presents to the motion of that of another when in close contact." So much depends on the knowledge of these principles in the operation of modern machinery, that an explanation thereof must be admitted to constitute an essential item in an illustration of the first principles of the science of mechanics. Traction consists of the same resistance which produces friction. In mechanics, the angle of traction is the angle which the direction of the power makes with a given plane. Traction implies the same resistance as friction, but in such a degree as to prevent any motion of the second surface on the first. The resistance of friction is produced by a minute roughness of the surfaces, whereby the projecting points of one surface take hold of those of the other; on this account, the resistance is found to be greater between two surfaces of equal metals or materials, than by those of diverse articles. The friction between two pieces of iron, or two pieces of brass, is greater than that between iron and brass. No metallic substance can be sufficiently polished to prevent this resistance; for although the roughness of the substance may not be palpable or visible, yet it evidently does exist in the smoothest metalic substances. To avoid, as much as possible, this resistance, machinists and millwrights have adopted the practice of making pivot boxes of a different material from that of pivots or gudgeons of machinery, and of oiling the surfaces of the parts of machinery that are exposed to friction, thus filling the cavities and preventing the actual contact of the surfaces. The resistance of friction is, in some measure, proportionate to the force with which the two surfaces are pressed together; it also depends in some measure on the extent of the surfaces which come in contact; but it has been proved by experiment that the resistance of friction is increased very little, if any, by the increased velocity in moving surfaces; hence it is advisable to use as small pivots as are consistent with safety with regard to strength. Traction is a word which has been in use only since the introduction of locomotives. When steam-power was first introduced on railroads, considerable doubt and anxiety prevailed on this subject, and various plans were invented and patented for preventing the engine wheels from sliding on the rails; but all these inventions have been rendered useless by the development of the important fact that the public has no occasion for them.—*Millers' Journal.*

Railroads Here and in Great Britain.

Americans of the sort that always think everything European better than their own are particularly fond of descanting on the recklessness of American railroading as compared with that of Great Britain. When accidents happen in this country there are always a great many people ready to draw this invidious comparison, and to lament over the careless management and imperfect construction of American railroads and rolling stock. The fact that there are no foundations for their theories does not disturb this class of critics. They are so destitute of national self-respect, and so snobbishly subservient to every thing foreign, that they do not care to be convinced that they are wrong, and rather prefer the habitual discredit which they help, in their various little ways, to bring upon their own country.

To more intelligent and impartial observers the periodical exhibits of foreign railroading are very interesting, in their illustration of the relative

safety of travel in this country and the United Kingdom. The English statistics for the first nine months of 1879 have just been published, and they show an extraordinary amount of mortality and accident on the railroads during that period; 305 persons in the employ of the railroads, or railroad contractors, were killed. 53 passengers lost their lives, and the total death list of the English roads for this short period, from all causes, mounted up to 686. During the same time no less than 2,420 persons were more or less mutilated on the roads. These are enormous figures for a country no larger than the United Kingdom. There are about 17,000 miles of railroad in Great Britain, against 75,000 miles of road in this country, so that, if the accidents were measured by extent of railroad, the Americans would have to kill about 3,000 people and mutilate about 10,600 more in nine months to equal the English statistics, figures far beyond any thing ever realized in this country.

When we come to look at the causes of this great array of British casualties, we find a considerable proportion assigned to the carelessness and stupidity of the victims themselves, to suicides and to accidents beyond the control of railroad management. But by far the greater proportion is due to just those defects of construction and of administration that so many people suppose are peculiarly American, collisions of trains, misplaced switches, or "points," as the English call them, wrong signals, the bursting of boilers, breaking of tires and axles, sinking of tracks and embankments, breaking of couplings of incline-plane ropes, and a reckless rate of speed at which certain express trains are driven. The whole class of accidents indicates bad management, bad construction, bad supervision, bad service, to an extent now unknown in the records of American railroading, except in some of the southern roads, which have been very slow to bring themselves up to any modern standard of efficiency.

There must always be an element of risk in railroading. Mechanism is not always absolutely perfect, material is not indestructible, human service is never infallible. But no one can give any attention to the general run of our American roads without being impressed with the unceasing endeavor to reduce the element of risk to its minimum. Pennsylvania's great railroad is a wonderful illustration of this all-pervading purpose. The immunity from accident of all kinds is so great that multitudes travel day and night in absolute forgetfulness that there are any dangers to be guarded against. But they are surrounded on all sides by a ceaseless vigilance and by a net-work of mechanical appliances whose sole purpose is to prevent accident. Now and then an accident occurs, and must occur. No amount of human ingenuity, vigilance or discipline will ever wholly prevent it. But it may safely be affirmed, in view of our own statistics and those of Great Britain, that no country in the world does its railroad business as well as it is done in America, both as regards the safety and the accommodation of passengers. On many roads in this country there is still much room for improvement; but, taking the average, there is no room for doubt as to the the superiority of their construction, equipment, management and service over that of Great Britain, and the safety of human life is the standard by which they are judged.—*Philadelphia Bulletin.*

Feeding Stock on Cars.

Mr. George F. Patterson, formerly a well-known railroad conductor of this city, has recently had patented an ingenious arrangement for watering and feeding cattle while *en route* on railroad trains. It has long been a subject of complaint among cattle dealers and owners that the animals, after they are once loaded on cars, cannot be fed or watered without unloading, and often, for want of yard accommodations, suffer for food. By the patent, at each watering-station, the cars are run under a framework extending across the track, which supports on each side of the car a number of troughs, which are made in sections, so that they can be overlapped and made to extend the entire length of the train. The sides of the cars are filled with sliding shutters, which, when opened, allow the cattle to drink from the troughs that are hung at a suitable height. The cars are also provided with detached hay-racks and feed-troughs, which can be swung in position without loss of time or trouble. The patent obviates all necessity of unloading the animals, and, by its simplicity and cheapness, will doubtless become popular among cattle dealers, and be of great benefit in preventing the animals losing condition, owing to want of proper nourishment.—*Baltimore Gazette.*

Railroad Grade Crossings.

The feature of American railroads which perhaps more than any other attracts the notice of foreigners, is the numerous grade crossings, especially in large towns and in the suburbs of cities. As railroads increase, there is a corresponding increase of stations, as well as of population and settlements along their lines, and crossings are multiplied in a like proportion. The streets of many compactly built towns are intersected for long distances by steam roads with a heavy traffic, and with imperfect provision for guarding against accidents at crossings and elsewhere. Notwithstanding the frequency of this class of accidents and the great loss of life in the aggregate resulting from them, there has heretofore been a surprising indifference to the subject among our people, which can only be accounted for on the theory that it has always been so, and that railway crossings are in fact a kind of necessary evil. With limited capital for the building of the vast network of roads which cover our immense territory, we have been eager to realize their advantages as quickly and as cheaply as possible, without due attention to the necessary precautions to insure safety. That ordinary unguarded grade crossings are nuisances, no one will deny. They are a source of constant peril to human life and of losses to the road companies in the form of legal damages and otherwise.

The time has come for some general movement, not of course to abate the evil altogether, for that is not practicable, but to restrict it to smaller dimensions, not only in the interest of the community but of the railroads. There really should be no grade crossings at all; but inasmuch as they are unavoidable, they should be protected in all populous localities by safety-gates, the expense of guarding them being a small matter as compared with the benefits accruing. It is not a sufficient argument against the adoption of these precautions to say that the responsibility rests with the victims who happen to be killed or injured merely because they fail to heed bell or whistle, or the sign warning them to look out for the locomotive. No one in town or country should be permitted in such cases to depend upon his own judgment as to whether he can drive across a track in time to escape being run over by an approaching train. Reckless or thoughtless people are very apt to miscalculate in such emergencies, and should be kept off the track by fences or gates, or even by legal penalties in case of unauthorized intrusion upon railway lines within the limits of large towns.

It is obvious that no very effective remedy can be applied except by legislation. The subject has already been brought to the attention of the legislatures of several states. In Massachusetts, the Board of Railroad Commissioners are vested with jurisdiction over the subject, and the impolicy and hazard of increasing grade crossings in that state are strongly set forth in their last report. During the past year 30 accidents of this class occurred on the Massachusetts railroads, resulting fatally in 13 cases. In regard to signals, the report says that although they are useful in diminishing the risks, yet there are none now in use that any railway manager would think of trusting as the only safeguard of a crossing. The track of the Pennsylvania Railroad which runs for nearly two miles through the populous portion of the city of Newark, N. J., has within the past winter been fenced in with an ornamental and substantial fence, with effective safety gates at every street crossing. A glance at the working of this plan is sufficient to show its great service in preventing accidents which were previously of very frequent occurrence. A great deal has been said about the risks incurred by freight-train men and the fearful catalogue of accidents in coupling cars. These risks, it may be said, are voluntarily assumed by those who engage in the service; but in respect to crossings, all classes of people who have occasion in their ordinary every day vocations to pass a railway track are exposed to danger.

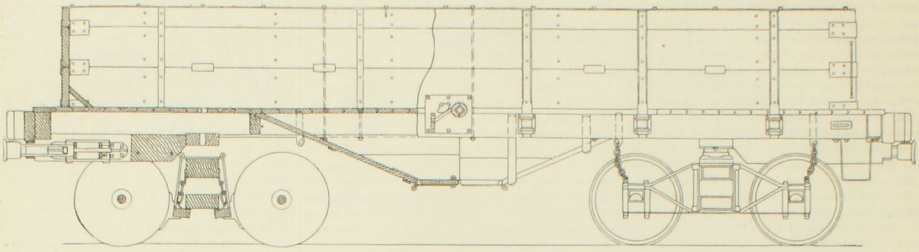
THE Chicago *Tribune* of April 25, contains a plan of the new Pullman Car Works to be constructed at Hyde Park, a suburb of that city, about thirteen miles from the court-house. These extensive works will cover 150 acres and employ 2000 men. The location is in near contiguity to a number of important railway lines. The erecting shops fronting the Illinois Central tracks consist of parallel structures 690 × 86 feet. The central section, containing the offices, store-rooms, etc., will be 100½ × 100 feet, three stories high, with an imposing tower rising to the height of 136 feet. Back of these will be four buildings covering a frontage of 11,000 feet with a general depth of 200 feet, containing the wood machine shops, boiler and engine rooms, iron machine shop, blacksmith shop, repair shops, etc. Still further to the rear will be a dry kiln and foundry. The grounds will be beautified with a fine system of parks, driveways, etc. The works will add much to the importance of Chicago as a railroad center, as well to the building up of the suburb in which they are located.

THE New York *Public* thinks there is danger in the present "boom," and points out that the 4,000 miles of railroad built last year in the United States cost, equipped, at least $100,000,000. The 6,000 miles which it is predicted will be constructed this year cannot cost less than $150,000,000. To a certain extent these roads will make new fields of production available, but, as a general rule, a new railroad, particularly in the West, only makes a new region developable. Meanwhile—that is, until more wheat, corn, pigs, cotton or iron are moving over the road because the road was built—its cost is as real a change on the productive industry of the country as if it had been spent on a standing army or any other non-producing object. It says this is a rich country, particularly rich now that both the south and the west share in the present development, but it cannot stand an annual charge of $150,000,000 spent in spiking iron to the ground without pretty soon stopping to take breath as it did in 1837, 1857 and 1873.

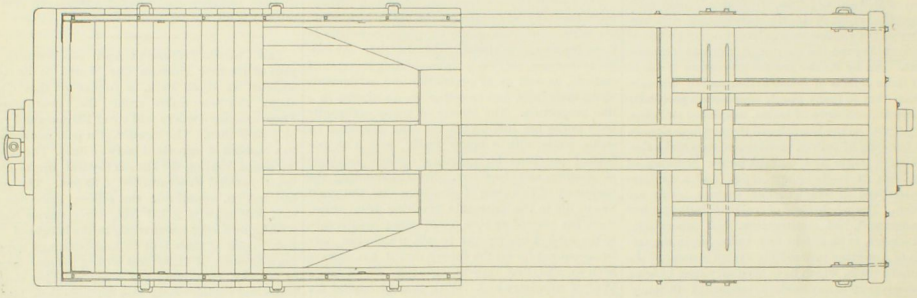
"MEN are what women make them" is the singular title of a new book. It may be true, but we have seen some dreadfully poor specimens of the manufactured article, which fact reflects badly either upon the material or the maker.

A SECOND-HAND furniture dealer in Detroit hung out a card inscribed "Buggy! For Sale!" and inadvertently hung it upon a second-hand bedstead on the sidewalk, where it attracted much attention

STANDARD TWENTY-TON GONDOLA COAL CAR—NEW YORK, LAKE ERIE & WESTERN RAILWAY.



Elevation and Section.



Floor.

GENERAL DIMENSIONS.

Length outside of end sills..... 25 ft. 7⅝ in.
Height, top of sills to top of side planks.... 3 " 1¾ "
Width outside of sills..... 8 " 0 "
Center of Bolster from outside of end sill. 5 " 0⅝ "
Door opening of Hopper.....4 ft. 8 in. × 2 " 6½ "

TIMBER—FINISHED SIZES.

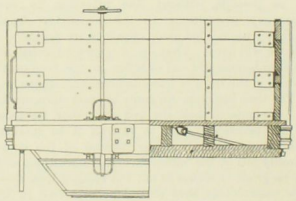
2 Outside sills, Georgia pine, 5 × 9 in. × 24 ft. 10⅝ in.
2 Intermediate sills, Georgia pine, 4 × 8 in. × 24 ft. 10⅜ in.
4 Intermediate sills, Georgia pine, 4 × 8 in. × 6 ft. 2⅝ in.
4 Side Planks, Georgia pine, 2⅝ × 14½ in. × 24 ft.
2 Side Planks, Georgia pine, 2⅝ × 7 in. × 24 ft. 0 in.
4 End Planks, Georgia pine, 2⅝ × 14½ in. × 7 ft. 6⅛ in.
2 End Planks, Georgia pine, 2⅝ × 7 in. × 7 ft. 6⅛ in.
2 End Sills, White Oak, 6 × 10 in. × 8 ft. 3 in, tapered to 6 × 9 in. at ends.
2 Bolsters, White Oak, 4⅜ × 12 in. × 8 ft. 1 in.
2 Cross Pieces, White Oak, 4 × 8 in. × 7 ft. 2 in, cut in lengths to fit between intermediates and side sills.
4 Draw Head Arms, White Oak, 4 × 9⅝ in. × 4 ft. 9⅝ in.
2 Filling Blocks, White Oak, 8¾ × 9⅝ in. × 1 ft. 8 in.
2 Buffer Timbers, White Oak, 4½ × 10⅜ in. × 2 ft. 11 in.
4 Buffer Blocks, White Oak, 4¼ × 8½ × 10½ in.
12 Stakes, White Oak, 3½ × 3¾ in. × 3 ft. 10⅝ in.
8 Keys in Sides, White Oak, 2⅜ × 3 in. × 8 in.
2 Doors of Hopper, White Oak 1⅝ × 14½ in. × 5 ft. 1 in.
2 Sides of Hopper, White Oak, 1⅝ × 12 in. × 10 ft. 4 in.
2 Sides of Hopper, White Oak, 1⅝ × 12 in. × 6 ft. 8 in.
2 Ends in Body, White Oak, 1⅝ × 12 in. × 7 ft. 6½ in.
2 Planks on Side Sills, White Oak, 1⅝ × 7 in. × 12 ft.
Flooring, White Oak, 1⅞ in. × 6 to 8 in. × 8 ft. 4 in.

TRUCK TIMBERS.

2 Bolsters, White Oak, 7½ × 12 in. × 7 ft. 6 in.
2 Sand Boards White Oak, 5 × 12 in. × 7 ft. 6 in.
2 Brake Beams White Oak, 3½ × 6 in. × 5 ft. 6 in., tapering at ends to 3½ × 4 in.

CONSTRUCTION.

Side and intermediate sills framed to end sills by double tenons: end sills secured at each corner to side sills by ⅞ in. strap bolts. Center sills secured to end sills by ⅞ in. strap bolts. Intermediate sills secured to end sills and cross-pieces, and cross-pieces secured to center and side sills by ⅝ in. rods. Bolsters housed out to receive sills, and secured by ⅝ in. bolts. Bolsters trussed by 1 in. rods with nut end 1¼ in. diameter.



End Elevation and Section.

Hopper supported by 3 × 1 in. wrought-iron straps, with ends turned outward 2 in. resting on side sills. Sides secured to frame by eight ⅝ in. bolts and four ⅞ in. strap bolts each side. Ends secured to frame by two ⅞ in. strap bolts each end, and to sides with angle plates of ⅓ in. wrought-iron (three inside and three outside), riveted with ½ in. button head rivets. Stakes and strap bolts riveted to body with ½ in. button head rivets. Sides protected from wear by 2½ × ⅜ in. iron extending full length of sides. Doors of Hopper fitted with wrought-iron hinges and connected by ⅝ and ½ in. chains to wrought-iron winding shaft 1¾ in. diameter. Buffer timbers fastened to end sills by two ⅝ in. bolts, and two ⅞ in. rods through bolster, end sill and buffer timbers. Buffer blocks faced with castings. Draw-head of wrought-iron, with cast-iron head; Draw-bolt 1⅜ in. diameter. Center pin for trucks 1¾ in. diameter. All screw-threads, bolt heads and nuts, must conform to the Car-Builders' Standard, known as the Franklin Institute or Sellers' system.

Trucks.—Centers of axles 4 ft. 10 in.; axles of best hammered iron; journals 3½ × 7 in., wheel seat 4⅝ in.; wheels 33 in. Frame bars 3 × 1 in.; bar below journal-boxes 4 × ⅝ in.; each corner of truck connected to car by ⅝ in. safety chains. Brakes to be attached to one truck on each bar between the wheels. Draw Head Springs double coil steel, 6 in. diameter by 8 in. long, with ultimate capacity of 18,000 pounds. Bolster springs, spiral, nine in a group, each 3 in. diameter by 5½ in. long, steel ⅝ diameter, springs fitted with castings, top and bottom.

THE drawings and specifications show the construction of a 20-ton gondola coal car which has been adopted as a standard by the New York, Lake Erie & Western Railroad. The design of the car did not originate with this road, but its present form and dimensions are the result or outcome of certain progressive improvements made by the Pennsylvania Railroad upon a coal-hopper car designed by that company some two years ago, the aim being to obtain better proportions with respect to dead and paying weight than have hitherto prevailed.

The movement in this direction has been quite general of late, and has not been confined to this particular road. It has been thought by many that the object could be attained by reducing the weight of the cars, and keeping the load, as heretofore, at 10 tons. But it has been found that lighter cars, although built of selected material, are nevertheless liable to be crushed in collisions or racked and damaged by going off the track. The alternative has therefore been adopted by a number of roads, of increasing the weight of cars, and in a still greater ratio the weight of their loads, so as to conform more nearly to the proportions which obtain on European railways, whose 4-wheel cars generally weigh about 13,000 pounds, and carry loads of 20,000 pounds. The universal adoption of the 4-wheel truck by our roads, in connection with the sharp curves and light construction which it permits, clearly indicates that economy lies in increasing the weight both of cars and loads to an amount per wheel that shall be found safe in practice. The tendency for the past few years has therefore been to increase the loads of box-cars to 12 and even 15 tons, and in accordance therewith the Pennsylvania Railroad designed the coal-hopper car above referred to, which weighed 18,000 pounds,

with a carrying capacity of 32,000 pounds. Quite recently, however, a further advance was made by the road in the same direction, by raising the sides of the car 6 inches and increasing the strength of some of its parts, so that the car now weighs about 19,000 pounds and carries 40,000 pounds, thus approximating very closely to the proportions of the iron car of the Baltimore & Ohio road, which weighs 10,500, and carries 22,000 pounds. The Pennsylvania car, however, has the advantage of a considerable margin of flat floor surface outside of the hopper, so that by flooring over the hopper when necessary, long, heavy or bulky return freight, not liable to damage, can be taken, and loaded and unloaded more economically than with box cars. In this way it is possible that the English practice of transporting large quantities of goods in open cars covered with tarpaulins may be adopted to some extent in this country.

For the above information, as well as for the drawings and specifications, we are indebted to Mr. O. Chanute, Assistant General Superintendent of the New York, Lake Erie & Western Railroad Co.

The Lighting of Cars.

BY W. E. PARTRIDGE.

In a previous article, which appeared in the April CAR-BUILDER, some suggestions were made as to the effect of the inside finish of a passenger car upon the lighting of it. It was shown that when dark woods are used for this purpose, and which are all the time growing darker, the lighting problem becomes quite a serious one. With a lighter finish, we may easily provide all the illumination that is needed. How this is to be done will now be considered.

And, first, as to the material. Whale oil, candles, coal gas and carbon oil have been used, and, with the exception of whale oil, are still in use. Upon a little reflection, it must be evident that oil of some kind must be used for the future lighting of cars; and so far as can be seen at present, such oil must be some of the products of petroleum. While gas and candles offer a great many advantages, oil is so far ahead of them in cheapness and universal availability, that it is almost useless to discuss the merits of any other material for general use.

The first consideration with railroad men in regard to this matter is that of safety. Contrary to the general impression that railway officials have little care for the safety of passengers, we find that this is the first thing to which their attention is directed when any new or novel appliance is proposed for their adoption. The fatal effects of kerosene are of almost daily occurrence, and this, with the horrible results which attend the burning of railway cars, have led a large proportion, not only of railway men but of the general public, to look upon all the products of petroleum as exceedingly dangerous. Fortunately, however, both as respects economy and convenience, there are a great many oils to be obtained from petroleum that are perfectly safe. Indeed, it is possible to produce car candles from the products of petroleum distillation. Between the solid paraffines on the one hand and the gasolines on the other, we have oils of every degree of combustibility. The heavier oils, as they are called, are as free from naphtha and as little liable to explode as lard or sperm oils, and it is to these we must look for a car-lamp oil. Such oils as these require at least a temperature of 300° in order to produce any vapors which will ignite, and they must be heated to at least 600° before they will take fire. As an example of the difficulty with which they will burn, we may mention some experiments we have witnessed. A bunch of cotton waste 15 inches in diameter was dipped in the oil until it was saturated. It was then taken out and set on fire, and when burning with a flame six feet in height, the mass was quietly lowered into the vat of oil and as quickly extinguished as if it had been dropped into water. Another experiment was made by saturating a half-barrel of shavings with the oil, and when it was well on fire, putting it out by pouring oil upon it. A lamp with this heavy oil will have its flame extinguished if it is inverted so as to allow the oil to run through the wick tube. If the oil is poured upon a board and a piece of red-hot iron laid on it, the oil in contact with the iron will blaze, but the flame will not spread over the surrounding oil. Numerous experiments of a similar kind have been made, and although they seem very wonderful to people who are familiar only with kerosene, they are not at all so to any one familiar with the use of sperm or other heavy oils. With respect to safety then, we need have no fears about using heavy petroleum oils. That question may as well be considered as settled. The inconvenience of using oils for lighting is owing to breakage of chimneys, leakage, smoke, and defective burners; but as these objections are also incidental to other methods of lighting, they need not be dwelt upon.

The next point to be considered is the quantity of light that should be provided for a car. In order to make comparisons between lights of different power, a standard is necessary. The English standard is the "candle-power," and this has been very generally adopted in this country. In France, the standard is a Colza oil-lamp, burning a given quantity of oil per hour. The standard sperm candle in use with us is not as convenient a measure for our present purpose as it might be, since it is not well known; but we may easily give an idea of its power. Repeated tests have shown that an ordinary large-sized student-lamp, when burning at its best, gives a light equal to 15 or 16 standard sperm candles. The French Carcel lamp has a power of 9½ standard candles, and it burns 648 grains of oil per hour. The English standard candle burns 120 grains of spermaceti per hour. Bearing in mind that the large-sized student-lamp may be taken as having a 15-candle power, and comparing it with the various car lights in use, we find that in some cars the illumination is no greater than that of 15 candles. Or, in other words, two or three candles in a car give less light than a single student-lamp, or a large Argand burner.

The best lighted cars we have seen have six burners with flat wicks, each one of which gives a light seemingly equal to that of a student-lamp, or 90-candle power altogether. These are the cars of the Metropolitan Elevated road in New York. To light an ordinary 54-foot passenger car equally well would require at least a 120-candle power. This, we think, would be in round numbers the smallest quantity of light that would enable passengers to read in every part of the car, and this quantity is of course required for suburban trains, it being understood that on through trains running all night, a less quantity is necessary. To give a car a light equal to 120 candles, at least eight lamps are needed, supposing them to have the ordinary burners. This seems a large number, as compared with the number usually to be found in cars, but the cost is by no means in proportion to the amount of light. For eight burners there need be but four lamps, or four oil founts, each supplying two burners. Upon a careful estimate of the cost, it will be found that it does not much exceed that of candles.

A series of experiments have recently been made in England to test the utility of different kinds of kerosene lamps, ranging in their lighting power from 9 to 29 candles. The burners were English, German and American. The average illuminating power of the largest light was 24½ candles. To make the comparison easy, the results were reduced to the number of hours a light equal to that of a standard candle could be supplied by a pint of oil. It was found that of all the lights exhibited, the least economical would last 100 hours for each pint. At this rate a pint of oil would run an ordinary student-lamp about ten hours. In England it was found that at the average price of petroleum oil, the cost was about 7½ pence for 1,000 candle hours, *i. e.*, with oil at 18 cents a gallon, it would cost about 15 cents for a light equivalent to that of a standard candle, burning 1,000 hours. In this country, Prof. Chandler has put the cost of a 14-candle lamp at ¼ cent an hour when burning mineral sperm. Prof. Kedzie puts the cost of running a lamp with mineral seal oil at about the same figure. Applying these estimates roughly to a car burning heavy mineral oil, and having a light equal to 120 candles, we find that a pint of oil per hour would be ample; and that for the four hours during which the cars of suburban trains would require to be constantly lighted, there would only be a consumption of half a gallon of oil per car. The present cost of heavy petroleum oils, whether "mineral seal," "mineral sperm" or "golden light," is between 30 and 40 cents a gallon, and consequently the four hours' lighting would cost only about 25 cents for the oil. Some of the oil venders estimate that the cost of burning a car candle is ½ a cent per hour. Supposing these candles to have a 5-candle power, which is a high estimate, it will be seen that the cost of lighting a car with three of them, and for 5 hours, would be 22½ cents, or nearly as much as that of 24 times the amount of light obtained from the heavy petroleum oils.

Uniform Height of Draw-Bars.

A meeting of the representatives of the mechanical departments of a number of southern railroads was recently held at Atlanta, Ga., to consider the question of uniformity in the height of draw-bars. The roads represented and the parties representing them, were as follows:

Wm. Rushton, M. M. Atlanta & West Point.
J. H. Flynn, M. M. Western & Atlantic.
W. G. Gramling, M. C. B. Western & Atlantic.
J. S. Cooke, M. M. Georgia R. R.
T. M. Preval, M. C. B. Georgia R. R.
R. H. Briggs, M. M. Mobile & Ohio.
B. J. Sitton, M. M. Selma, Rome & Dalton.
R. Wells, S. of M. Louisville & Nashville.

After a general interchange of opinion on the subject, the following resolution was unanimously adopted:

Resolved, That this meeting recommend that a height of draw-bar of 33 inches from top of rail to centre of draw-head be adopted as the standard for freight cars.

Copies of the resolution were directed to be furnished to the officers of all roads that interchange cars with the roads above named, and the general manager of the Louisville & Nashville road was to be requested to bring the subject to the notice of other general managers of southern roads with the view of adopting the height recommended.

AN experimental test of the Holland hydro-carbon retort, for generating steam on locomotives, has just been made on the Long Island Railroad. The grate-bars of an ordinary engine were taken out and the retort put in their place, containing four compartments, two for water and two for oil. A tank of naphtha was placed in the tender and connected with the retort by gas-pipes. An almost pure hydrogen gas is generated in the retort, which produces an intense heat and no smoke. The trial was very successful, although made under certain unavoidable disadvantages. The cost of the oil consumed was nine cents for six miles, the crude naptha costing three cents per gallon. The experiment was witnessed by a large number of merchants and scientific men, who tendered the inventor, Dr. Holland, a vote of thanks.

Communications.

Shall We Build or Buy our Locomotives?

To the Editor of the National Car Builder:

A few years ago there was apparently a very decided tendency among railroads to abandon the locomotive-building shops and rely upon their own repair shops for any supply of new motive power they might need. This was, without doubt, partly due to the depressed state of business and the light traffic resulting therefrom; not many new engines were needed, the repair-shops were comparatively idle, and it seemed the easiest thing to do. There was, also, in many cases, a belief that engines could be built more cheaply than they could be bought, and at any rate, the building was easier in a financial way; the money went out in driblets, as it were, and no large payments were needed, and probably on many roads the cost of the locomotive was presented in such a form that accurate comparisons of cost could not be made. But with the revival of business the old equipment was, in many cases, found to be insufficient or worn out, and new ocomotives were needed more quickly than the repair shops could turn them out. Recourse was had to the locomotive builders, and their shops once more began to wear an air of life and prosperity. The new engines were naturally subjects of criticism and close comparison; a reaction set in, and now there is manifest a decided tendency to go back to the builders again, and to consider the railroad shops once more as repair-shops only and not as factories for the construction of new work.

Now the writer, in order that his motives may not be misconstrued, would say just here that he has had experience both in a locomotive-building shop and a repair shop; that he is not now connected with either, but in a perfectly independent position, so that he considers himself in a position to offer from an entirely disinterested point of view, a few thoughts on the question "Shall we build or buy our locomotives?"

The first question on every well-managed road must be of quality—where can the locomotives be had which are capable of doing the most work at the least cost for operation and repairs. It is just here that we meet with the greatest difficulty. The master mechanic who has designed and built locomotives in his own shop naturally regards them with especial favor. They are his children, as it were, and are very apt to be especially cared for and given every opportunity to show their good qualities. The locomotive runners and firemen, especially on a smaller road, have something of the same feeling; they have a little natural prejudice in favor of the home-made engine, and they appreciate thoroughly the fact that to find favor in the "old man's" eyes they must make the best of his engines. Under these circumstances (and I am not finding fault, but merely accepting human nature) it is not always very easy to tell what engines have done the best work, or whether they have all had an equal chance to show their good qualities. But I am very certain that in no ordinary repair shop can as perfect work be done as in most building shops, and this must not be taken at all as a slur upon master mechanics. It is simply because the whole energy of the building shops is turned to production of new work. Their tools, their machinery, their whole organization are intended to produce new work in the best manner possible, and they are provided with many things which a repair shop necessarily lacks. I say an ordinary repair shop, for from these remarks a few of the great shops (such as those of the Pennsylvania Railroad at Altoona) must be excepted, for the reason that they are really building shops and have been designed and organized with quite as much reference to new work as to repairs. But, it may be said, do not the locomotive builders aim only to turn out new work as quickly and cheaply as possible, and to sell their engines without regard to quality? A very little reflection will show that this can hardly be the case. A locomotive is not a product for immediate consumption; it must stand the test of years of use, and its faults and defects are sure to be found out sooner or later. No builder will venture, or can afford to turn out poor work, for if he did, it would surely be found out, and the competition between the shops is so keen that he would surely go to the wall. If he took no pride in his work, at least self-interest would prevent him from allowing work to be slighted or neglected. And I know enough of our locomotive builders that they *do* take pride in their work and try to turn out as good a locomotive as they can.

The other main question is that of cost. And here I believe that not much argument is necessary. It must be apparent to any one of experience that a factory provided with every appliance specially designed for the construction of new work and dependent for its profits upon the sale of that work, must be able to build more cheaply than a shop where the new construction is only an incident, liable to be put aside to make way for pressing repairs, and necessarily of minor importance. A building shop is organized to build, a repair-shop to repair, and if each is designed and organized as it should be, it loses when it steps out of its proper sphere. It is true that we sometimes see statements that "the A. & B. road shops have just turned out a new passenger engine at considerably less cost than it could have been bought in Paterson or Philadelphia," and the like. But these statements will not bear close analysis. I know from experience that it is almost the univer sal practice in making up statements of cost to charge only the actual payments for labor and materal; nothing is allowed for interest on cost of shops, interest on capital, wear and tear of tools, repairs of shop and tools, depreciation, cost of patterns and the thousand-and-one other things which a builder must take into account, and which make no inconsiderable part of the cost. I have been told that it is a practice in some shops to surreptitiously charge part of the cost of new engines to repairs. This could easily be done, as any one familiar with shop routine will understand, but I have never seen it done, and will dismiss it as a slander.

To my mind, the only argument for building engines in a repair shop (except in the case above mentioned, of such shops as those at Altoona and Aurora, and a few others) that has any weight at all, is that a larger force can be kept at work in readiness for extraordinary repairs when needed, and slack times can be filled up with new work, thereby enabling a road to keep a sufficient force of steady and competent men in its employ, and avoid the necessity of hastily picking up new and untried men in an emergency. How much weight this has master mechanics should know; the answer must depend largely upon the circumstances of each road.

Now I do not advance these ideas without some facts to support them. The Philadelphia & Reading road, the capacity of whose shops is certainly not small, has lately gone to the Baldwin Works for a lot of new engines, avowedly for the reason that they could be bought there for less than they could be built at the company's own Reading shops. The New Jersey Central, with large and well-equipped shops, is buying its new locomotives, and more than one additional instance can be given. I have lately seen a statement coming from one of the Pacific roads, that the cost of locomotives bought in the East was far below that at which they could be built in the company's own extensive shops. This instance it must be admitted, loses some of its force when we take into account the higher cost of labor and material in California, but the difference is more than this would account for. And I have heard a statement coming direct from a prominent western manager, that his road found it better, not only to buy its locomotives, but to leave their details largely to the builders, using no cast-iron specifications, but merely indicating the desired size and capacity of the engines and the work for which they are intended.

Instances might be multiplied, but would serve only to lengthen this already too long article. I have only one thing more to say, and that is that in what I have said I have no intention whatever to depreciate the ability of master mechanics. I have only tried to show that for new locomotives it is best to go to locomotive builders, not because the master mechanics have not the ability required to design and build them, but because the circumstances under which they work prevent them from doing so with the utmost possible economy.

M. M.

The Cracking of Paint on Passenger Cars.

To the Editor of the National Car-Builder:

I have read the communications upon the subject of car painting in your recent issues, and feel somewhat interested in the question relative to dark and light colors. The subject in my opinion is of greater importance to railroad managers than is generally supposed, and I hope the question will be fully discussed before it is dropped. The two most common colors used in painting passenger cars are yellow, and a dark color called by some the Pullman color. Now sir I do not consider it necessary for me to repeat what has already been said by your worthy correspondent "Buckeye," *i. e.*, that dark colors are not as durable as light ones. This fact is so plain to observant painters, that I am at a loss to know how one of the trade could undertake to contradict the assertion. Nevertheless, it has been done by Mr. Gardner.

It has been my constant study and desire for many years to do the work of the company by which I am employed, in an economical and durable manner; and with all my care in mixing and applying the color that I am required to use, (and which I will say here is the same notorious Pullman color) I have failed to obtain the object sought. Why is this? Some will say the bad results are attributable to the lack of care or skill in the mixture or application of the color. Indeed, Mr. Gardner has already said so. I will first call your attention to the fact that the color I am required to use is composed chiefly of burnt umber and raw sienna, neither of which will admit of the free use of oil in their mixture, and consequently must be mixed with turpentine, etc., the greatest part of which evaporates, and leaves the dry color entirely dependent upon the varnish for protection. I know I am speaking of oil pretty strongly, and some painter will condemn me on this point. But if he will be candid, he must acknowledge that oil is the life of all paint; and without it, when your varnish is gone, you will find your body color also among the missing. In this country, where it is an accident if a car gets a coat of varnish once in two years, he will pardon me if I lay a little stress upon the oil. When cars are painted dark and varnished very often, as with the Pullman cars, they have given better satisfaction. But the fact of their having been varnished so often is not always considered in connection with the comparison of the durability of the two colors. Some one who has an "opera-glass" may ask why it is that this burnt umber and sienna, etc., will not admit of oil in its mixture. I claim that these colors have no drying qualities of their own, but rather retard the action of the small amount of lead there is in the mixture, and when mixed with oil, will not dry sufficiently hard to admit of varnishing in the usual time allowed in a railroad

shop. And if the varnish is applied to a body of paint before it is perfectly dry, it will exclude the air, and thereby stop the process of drying with the paint; and the varnish on the outer surface drying more rapidly than the paint beneath, causes the surface to crack. Coach painters, knowing this, prefer rather to limit the durability of their job, or depend entirely upon the varnish, than take the risk of cracking the paint—a result that is so plainly to be seen whenever it occurs. Very little notice is taken of a car while the wearing process is imperceptibly going on, but when the wear has reached a stage that shows the paint to be badly cracked, every one will want to know what is the cause of it and how it can be remedied.

TEXAS.

The Central Pacific Railroad Shops, at Sacramento, Cal.

SAN FRANCISCO, Cal., April 17, 1880.

To the Editor of the National Car-Builder:

A few brief notes of a recent visit to the shops of the Central Pacific Railroad, at Sacramento, may be of interest to your readers, although to convey any correct idea of these extensive works would require a much longer letter than your space will allow. Since the completion of the railroad connections with the place, it has ceased to be a rural city as it once was. In former times the principal streets were lined with immense covered wagons, called "mountain schooners," which waited the arrival of the boats from San Francisco to distribute their freight to the ranches and mines of the interior. These old-time vehicles are now things of the past, and have given place to other and more effective agencies for transportation.

The shops of the Central Pacific cover an area of 15 acres, and are fitted up with all the requisite facilities for the construction and repair of rolling stock. They are built upon made ground varying in depth from 16 to 25 feet, and composed of silt and mining *débris* taken from the mouth of the American River. Water is supplied by a well sunk to a stratum of gravel some 65 feet below the surface. The machinery is driven by a 300 horse-power engine. The principal work now in hand is repairing, upon which about 600 men are employed. Aside from machinery for two river steamers, no new work is under way nor even projected. In flush times, as many as 1500 men have been employed. In the locomotive department, engines in process of construction can, by means of a traveling overhead-railway, be lifted bodily and transferred from one part of the shop to another as the progress of the work may require. This company, unlike the Philadelphia & Reading and some other roads, believes in brass work as an ornamental feature of their engines, and the brass foundry is therefore an essential part of the works. The wheel foundry has a capacity of 40 wheels a day. The emery-grinding process, for restoring wheels that have become untrue from running, is successfully applied, and a great number of wheels that would otherwise be unfit for use are put in condition for four or five years' additional service. The cost of the process is about one dollar per wheel and the saving effected in the general wheel expenditure, taking everything into account, is estimated at about six dollars for every wheel so treated—an item which railroad men who are at all acquainted with this newly-discovered process will not be slow to appreciate. In connection with the wheel foundry is an immense box in which worn-out wheels and other castings are broken up by a drop-weight.

Everything in these extensive shops is thoroughly systematized, one example of which is the management of tools. These are classified according to their size and use, and kept in the tool room in revolving racks. No time is wasted in hunting for any particular tool, and when one is taken it is charged to the man who takes it, and who is responsible for its proper usage and return.

Among the cars built here are what are called "emigrant sleepers," some description of which has doubtless already appeared in the CAR-BUILDER. They are well designed, and a great boon to this class of passengers. As respects material for cars, oak and Oregon pine are chiefly used. For interior finish, the California redwood is not much used. I hope before long to be able to send you some detailed information in regard to the native hard and fancy woods of this region, and their adaptation and use in car construction. In regard to locomotives, the General Master Mechanic, Mr. A. J. Stevens, is of the opinion that they can be bought of eastern manufacturers very much cheaper than they can be built here, and that in the course of a year the eastern shops will be much less pressed with orders than they are now.

I must not omit to mention a most worthy enterprise in connection with this road, to which my attention was called while at the shops. About half a mile from the works is a railway hospital—not a receptacle for useless inventions and appliances, as the term sometimes indicates in railway parlance—but a retreat for disabled employés and the treatment of passengers injured by road accidents. It has a capacity for 150 patients. The officers are a physician, surgeon, steward and dispenser. Men employed in the shops contribute 50 cents a month toward its support, and are entitled as patients to treatment and board free of charge. All excess in expenses is paid by the railroad company.

AMICUS.

Car-Building in St. Louis—A Novel Combination of Car and Locomotive.

ST. LOUIS, Mo., April 24, 1880.

To the Editor of the National Car-Builder:

"We are about as busy as we care to be," said the President of the Missouri Car & Foundry Company to your correspondent yesterday. And this expresses the condition of existing affairs in all the shops of this city. President McMillan further said that the 600 workmen now employed at their car shops and foundry, were turning out an average of ten freight cars per day; which is about their full capacity. At the foundry they are melting 75 tons of pig iron daily, all of which goes into car wheels and other castings for freight-car construction. The most recently completed contract turned out at these works was an outfit, partially new, for a circus and animal show. At present work is progressing on contracts as follows: For the Missouri, Kansas & Texas Railway 150 box and 50 stock cars; for the Missouri Pacific 50 stock cars; for the Gulf, Colorado & Santa Fe, 75 flat and 75 box cars; and for a brewery company in this city, 50 refrigerator cars. It may be remarked that these works, removed to this city from Cambridge City, Ind., last fall, now constitute one of our leading industries. Their car works proper cover ten acres of ground, and the foundry, a short distance away, covers an entire square. The removal of the works to this city entailed an expenditure for new buildings, new machinery, etc., of nearly $75,000. But their location places them within easy reach of all their supplies—wood, iron and fuel.

The car-wheel foundries here are all busy on orders, and are likely to be for months to come. The decline in the iron market will have the effect of giving a fresh impetus to car building, although during the high prices of American pig large quantities of Scotch pig were used here in these foundries. Several new contracts for cars are to be let at an early day, bids being taken this week for several large orders.

New Jersey furnishes a very large portion of the locomotives for our western roads, and it will be a new thing to see a St. Louis locomotive running on a railroad in that state; yet such a thing will occur during the present season. Messrs. M. M. Buck & Co. took a contract during the past week for the construction of a novel engine and car for the Blairstown (N. J.) Railway. The contract calls for a whole train, consisting of a combined car and locomotive, with room for only six passengers besides the engineer, who is his own fireman. Mr. Jay Noble, the engineer under whose direction and plans it is to be constructed, a few days since gave the writer his ideas of locomotive and car building, which are to the effect that the nearer the weight of a car is placed to the road-bed the less danger will there be of accident or track jumping. This train will be constructed on that principle. The engine, eight horse-power and with 4×6 inch cylinders, will have the link motion and an upright boiler. The driving wheels, four in number, will be only 24 inches in diameter, and the floor of the entire car only 41½ inches from the track. The machinery of the engine will all be under cover except the main rod.

This rather novel car-locomotive, or combination, is intended for use as a directors' train, and the builder guarantees a speed of 45 miles per hour with perfect safety; and this claim is not made idly, as a speed of 16 miles in 19 minutes has already been accomplished by a locomotive of this type from the same shop.

W.

White Oak and Yellow Pine.

To the Editor of the National Car Builder:

In respect to the best material for center and intermediate sills for freight cars, I agree with your correspondent "Paul" that there is a prevailing prejudice in favor of white oak. There can be no doubt that a good clear stick of this timber is to be preferred to good, clear yellow pine for center stringers. Oak is tougher and has greater tensile strength, and these qualities are especially required in center or draft sills. But there is another point to be considered in deciding between the two. I believe that under the same conditions, a piece of white oak will rot quicker than yellow pine. This, as all events, is my experience; and furthermore, I believe that oak center or draft-sills will rot out before pine will wear out. Another point is, that in a pile of either of these timbers there are always more or less knotty and sappy pieces, which would do for intermediates, but not for center or side sills. In case pine is used exclusively, there is a chance to work in the inferior pieces for intermediates; whereas if oak is used for center pieces only, you will have to use the good, bad and indifferent, or else throw out what is no better than inferior yellow pine. So, taking everything into consideration, there would seem to be a balance in favor of pine for all longitudinal timbers in a car.

MACK.

Uniformity in Freight-Car Construction.

The following are the material portions of a letter written by Mr. John Ortton, the General Master Car-Builder of the Canada Southern Railway, to Mr. C. A. Smith, Secretary of the Car-Builders' Association, and read at the monthly meeting held on the 29th ult., at the Association Rooms in New York. The letter was written at the request of Mr. Smith. Mr. Ortton says:

"That there is now more than ever before a need for uniformity in the construction of freight cars, must be patent to us all. But while it is desirable to make all parts of each class of cars as nearly alike as possible, the absolute necessity for uniformity refers more especially to those parts liable to frequent trouble, and for which duplicates of the parts broken or destroyed must be obtained in order to replace them.

"Commencing first with draw-bars, every body knows that seldom a train passes over any road without some being more or less damaged. Now,

what we want in this case is, to have all draw-bars alike in length, width, and depth, so that a broken one may be readily replaced, whether of wrought or cast iron. The Association has agreed on certain fixed dimensions for these, and there can be little if any difficulty in the way to prevent conforming to them. The same observation applies to the height of draw-bars from the rails; but it is no uncommon thing to find a great lack of uniformity in that respect, and many a hand has been maimed from that cause alone, where the difference in height was so great that the coupling up of draw-bars became a dangerous operation.

"Then of centre-plates we find a multitude of patterns varying in size between nearly three feet diameter and ten inches—no small difference. In like manner we find trucks of every color and creed running over our roads; some all wood, others of wood and iron, and others still, all iron. Some are constructed after the meanest designs imaginable, and are utterly unfit for carrying safely the loads they are expected to bear.

"What we want in a truck are simplicity and strength, and, in my opinion, the best one adapted for the rough usage met with, is an all-iron one with swing-bolster. The elasticity obtained from an easy-riding truck of this description is felt by all parts of the car, and experience proves this, in the maintenance of cars so equipped.

"It is not my province to set forth the superior merits of one kind of truck over another, but if the selection of one rested on my choice, I should certainly take one with iron transoms, and preferably those made of channel-bar iron, as being the simplest, while they make the strongest form of beam in proportion to their weight, for carrying a load.

"The other more essential parts which ought to be uniform are the brakes and connections; and lastly, though none the less important, the axle, journal box, bearing, and key. If only the parts above mentioned were duplicated from one set of patterns, and put in general use over our roads, our companies would soon see the beneficial results in the greatly reduced expenses of their car departments, while the freight cars themselves would present a more healthy appearance, due to having been properly 'doctored,' instead of receiving the more ordinary treatment which they get under existing difficulties, and which resembles greatly in its results some of the villainous quackery practiced alike on things animate and inanimate.

"There are only a few words more that I wish to say as to 'uniformity.' My interpretation of that word is not merely a 'similarity in appearance,' but approximating mathematical exactness, like duplicate patterns made from one pattern. As an illustration in point, I would refer to a journal box, bearing and key, as used on three important roads. Each road professes to have the M. C. B. standard, yet the width of space inside of the box where the bearing and key fit varies enough to prevent their being interchangeable, one measuring 4¾ inches, another 4½, and the third 4⅝, so that the bearing and key of one will not fit the boxes of the others. Similar differences exist in the pedestals. One puts on a piece here, and whittles off a piece there, while another just reverses the operation, each thinking probably at the same time that he is improving his pattern by what he is doing. It is often, in this way of doing things, that we may unwittingly annihilate uniformity. What is really wanted is, that any specific article designated by the Association as a 'standard,' shall be duplicated so nearly alike on all roads as to create no difficulty in replacing any broken one, whether on a foreign or home road.

"As a conclusion to my remarks, I sincerely hope that your meeting will be well attended, and trust that all I have said will be taken as I intended it, simply as suggestions tendered in a persuasive shape, and that a big stride will be made toward the desired 'uniformity.'"

Yard-Masters' Mutual Benefit Association.

We print below a circular letter prepared by a committee of this association and addressed to the managers and superintendents of railroads throughout the country. The object of the circular is to present the aims and purposes of the association to these officers with the view of enlisting their coöperation in some form of indorsement or approval, so yard-masters who have not yet joined the organization may be encouraged to do so. Aside from the mutual benefit to be realized from contributions for the relief of the families of deceased members, the advantages to be derived from meeting together once a year to discuss matters pertaining to their special vocation, are obvious. Prominent among these matters are the numerous devices designed to make the handling of cars less hazardous and easier. But it is not the intention of the association to advertise any particular device as being better than others of its class, by a direct indorsement of its merits. New appliances and methods of construction will be discussed, and in this way the members will become acquainted with one another's views and prefererces, but no vote will be taken upon the merits of such appliances and methods. To do so would be sure to arouse the hostility of rival interests, demoralize the association and destroy its usefulness. The next meeting will be held in Boston on the 9th of June.

CIRCULAR.

The Yard-Masters' Mutual Benefit Association of the United States and Canada.

DEAR SIR: The object of this Association is to provide for and protect the widow and orphan against the cold charity of the world in case of the disability or death of any of its members. This is done by assessing each member one dollar in each case, the full amount going to the family of the unfortunate member. The benefits are many, not only to those who are members, but also to the railroad companies represented—hence we call our organization a Mutual Benefit Association. It brings us together once a year, thereby enabling us to become acquainted and interested in each other's welfare, and therefore do our work with more comfort and dispatch and with less expense to the companies than heretofore. Yet to more fully realize the objects and benefits sought to be attained, we desire to give every person entitled to membership under our constitution an opportunity to join us, after briefly stating the advantages to be derived from the Association. We most respectfully ask your aid by indorsing us in this good work, if consistent with your views.

GEORGE W. EVANS,
PHINEAS REED,
ALFRED F. FLEMING, } *Committee.*

Iron Freight Cars in Germany.

One of the questions sent to the railroads in the German Railroad Union and made the subject of a report at the technical convention of 1878, was as follows:

"Have freight cars constructed wholly of iron proved satisfactory, or are they excelled by those built of wood with an iron frame-work?" The report says that open cars for the transport of such coarse freight as coal, lime, ore, ballast, etc., are used in consequence of their lightness, low cost of construction and durability, to a considerable extent. Their principal disadvantage lies in the liability of the metal to rust unless they are kept very carefully painted, and the difficulty and expense of making slight repairs. When badly damaged or neglected, they can not profitably be repaired. Covered freight cars wholly of iron are unsuccessful, chiefly from want of durability and cost of repairs and preservation. The use of iron in the construction of the frame-work, especially in place of the heavy wooden under-frame, has proved very successful, and is recommended for low cost of construction, strength, lightness and durability. The building of freight cars of wood, plated with sheet iron, or built entirely of iron, with the exception of the flooring, has been almost abandoned.

CERTAIN master mechanics and car-builders of southern roads, have all at once become so alive to the importance of a uniform height of draw-bars to freight cars, as to call a meeting and pass a resolution fixing the height at 33 inches. Why, gentlemen, you are as far behind the age as old Mr. Van Winkle was. This very thing was done by the Car-Builders' Association, and promulgated to the world from Richmond, Va., nine years ago.

MR. G. M. BEACH has been appointed road master of the C. C. C. & I. road, with office at Cleveland, Ohio.

Tank Locomotive.

We give a full page engraving representing one of two locomotives of the Forney type, which were recently built by the Baldwin Locomotive Works for Morgan's Louisiana & Texas Railroad. They are intended to push cars up the levee on the Mississippi River to and from the boats. The incline is often very steep in certain stages of the water, and therefore a very powerful engine is required for the work. After the trains are made up, these locomotives are used for road engines. Their long and flexible wheel-base and great weight adapt them for both kinds of service.

The advantages of this kind of engine have been so often set forth by the inventor, that it seems hardly necessary to repeat them. It may be said, however, that what is claimed for the plan is, that the whole weight of the boiler and machinery, which is permanent, is carried on the driving wheels, while the supply of water and fuel, which is variable, is carried on the truck. Extending the frames beyond the fire-box to receive the water tank, and then supporting the latter on a truck, gives a long and flexible wheel-base, the same as that of an ordinary American locomotive. These engines are consequently remarkable for their steadiness, while their great tractive capacity, in proportion to their size, always excites surprise.

The dimensions of the engine illustrated are as follows:

Gauge of road	4 ft. 8½ in.
Size of cylinders	17x24 "
Diameter of driving wheels	49 "
Distance from centre of truck to centre of extreme driving wheels	18 ft. 0 "
Distance from centre to centre of driving wheels	7 ft. 6 "
Length of grate	58 3-16 "
Width of grate	34 ⅜ "
Outside diameter of smallest boiler ring	48 "
Number of tubes	144
Size of tubes	11 ft. 8 in. x 2 in.
Square feet of grate surface	13.75
Square feet of heating surface in fire-box	58.5
Square feet in tubes	873
Total square feet	931.5
Capacity of tank	700 galls.
Weight of engine with full supply of fuel and water	70,000 lbs.
Weight on driving wheels	50,000 lbs

It may be added that the Baldwin Locomotive Works have built a large number of this type of engines, chiefly of light patterns. The New York Elevated Railroad is now equipped with eighty-five of this plan; and they have been furnished for all kinds of service. The two for the Louisiana & Texas Railroad are thus far the heaviest which have been built of this plan.

Passenger Locomotive.

We give a full page illustration of a new standard and passenger engine recently built at the Hartford shops of the New York, New Haven & Hartford Railroad, under the supervision of Mr. John Henney, Jr., the Master Mechanic of the road.

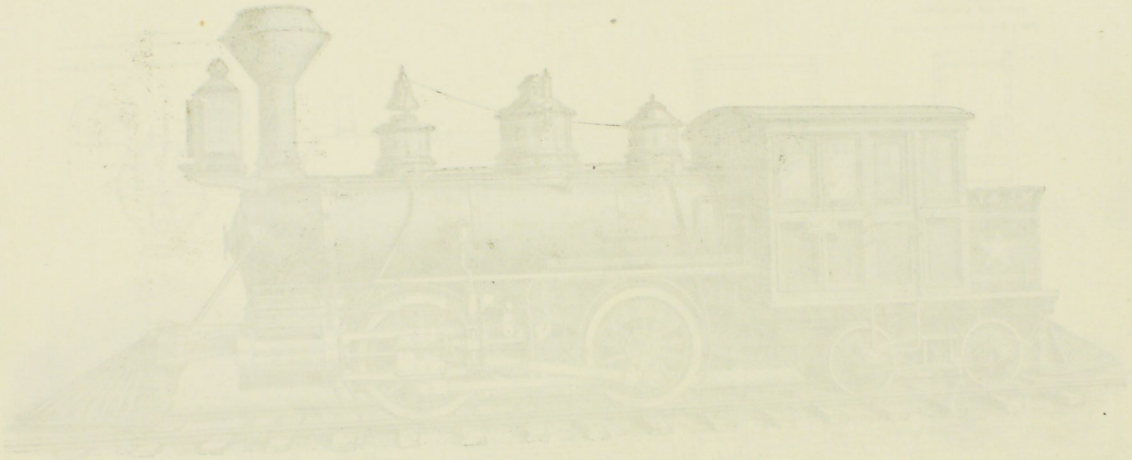
The dimensions of the engine are as follows:

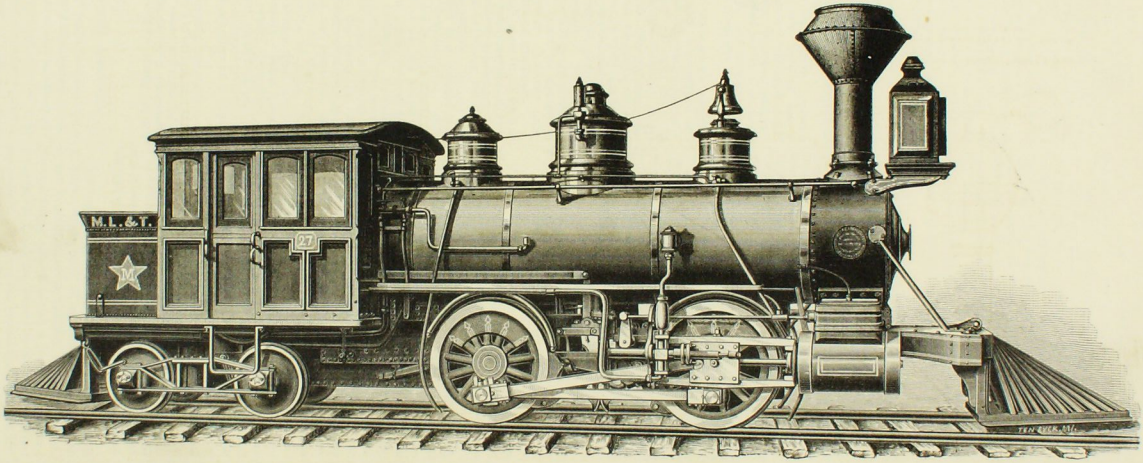
Size of Cylinders	17 × 22 in.
Size of Steam Ports	16 × 1¾ in.
Size of Exhaust Ports	16 × 3 in.
Throw of Eccentrics	5 in.
Outside lap of Valve	¾ in.
Inside lap of Valve	⅛ in.
Diameter of Driving Wheels	5 ft. 3 in.
Number of Flues	170
Size of Flues	11 ft. 7 in. × 2 in.
Total weight of Engine	70,000 lbs.

Equipped with Hayden's Pot Smoke Burner, Adjustable diaphragm regulated from Cab, and Buchanan's Water Bridge.

WHAT a difference there is between the ancient methods of travel and those of the present day! Years ago it took a month to go from here to Europe, while to-day we can ride the whole length of the Bleecker street road in less than a week.—*N. Y. Sunday Times.*

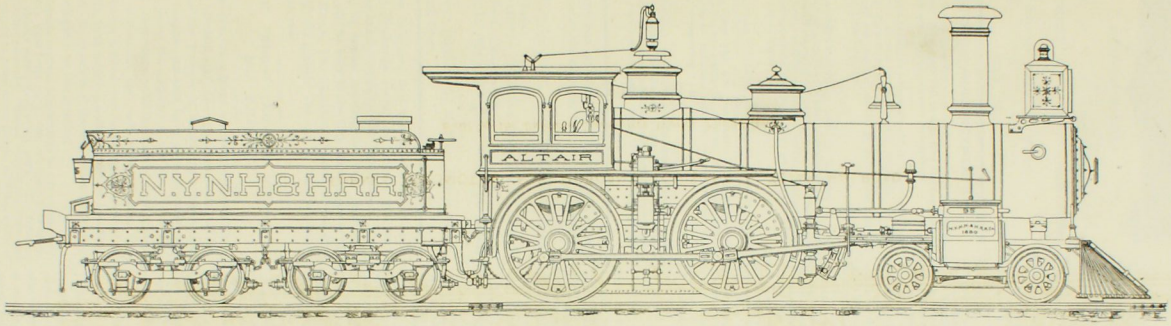
THAT was a triumphal appeal of the lover of antiquity, who, in arguing the superiority of old architecture over the new, said: "Where will you find any modern building that has lasted so long as the ancient?"

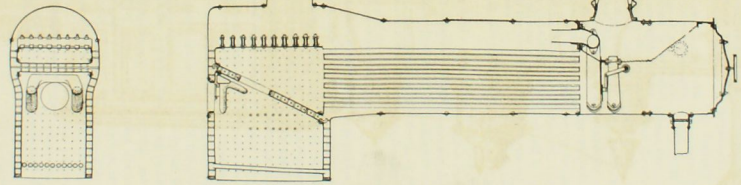




FORNEY LOCOMOTIVE, FOR MORGAN'S LOUISIANA & TEXAS RAILROAD.

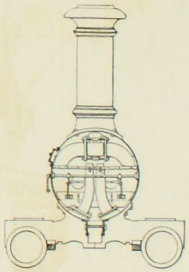
Built by the Baldwin Locomotive Works, Philadelphia.



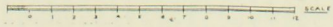


Section through Fire Box
Showing Air Ducts

Longitudinal Section.



Section through Smoke Arch
Showing adjustable Diaphragm.



STANDARD LOCOMOTIVE, USED ON THE HARTFORD DIVISION OF THE NEW YORK, NEW HAVEN & HARTFORD RAILROAD.

Built at the Hartford Shops—John Henney, Jr., Master Mechanic.

NATIONAL CAR BUILDER

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EDITORIAL ANNOUNCEMENTS.

Subscription.—ONE DOLLAR *a year in advance, postage prepaid. One copy will be sent free for one year to any person sending us five new subscribers.*

Addresses.—*Business letters should be addressed, and drafts and money orders made payable, to* THE NATIONAL CAR-BUILDER. *Communications for the attention of the Editor should be addressed* EDITOR NATIONAL CAR-BUILDER.

Advertisements.—*Nothing will be inserted in this journal for pay,* EXCEPT IN THE ADVERTISING COLUMNS. *The editorial department will contain our own views and opinions; and the rest of the reading matter, aside from advertisements, will be such as we consider of interest to our readers.*

Contributions.—*Articles relating to railway rolling stock construction and management, and kindred topics, by those who are practically acquainted with these subjects, are especially desired. Also early notice of changes in railroad officers, organizations and names of companies.*

Special Notice.—*As the* CAR-BUILDER *is printed and ready for mailing on the last day of the month, advertisements, correspondence, etc., intended for insertion, must be received not later than the 25th day of the month.*

SUBSCRIPTIONS *to the* CAR-BUILDER *will be received, and copies kept for sale, at the following places:*

A. WILLIAMS & CO., 283 *Washington Street, Boston, Mass.*

L. SCHAFFNER, *Cigar and News Dealer, Grand Pacific Hotel, Chicago, Ill.*

WILLIE H. GRAY, 306 *Olive Street, St. Louis, Mo.*

ROBERT CLARKE & CO., 65 *West Fourth Street, Cincinnati, Ohio.*

WE are informed that the Russell House and Michigan Exchange Hotel, in Detroit, will both be used as headquarters for the Car-Builders' Association at its annual meeting in June. The convention will be held in the City Hall, opposite the Russell House, the Common Council of the city having kindly granted the use of their chamber for the purpose.

STANDARD FREIGHT CARS—THE MEETING AT EAST BUFFALO.

On the 21st ult. a large number of car-builders, railway officials and others, met at East Buffalo, N. Y., for the purpose of inspecting a number of sample freight cars that have been recently constructed under the auspices of the New York Central and other roads, with the view of determining upon specifications for each class of cars, that would be recognized and hereafter adhered to as standards, thus securing a uniformity of construction. We have received the following account of what took place at the meeting:

Considerable interest appeared to be felt by the visitors, as they went from car to car, on their tour of inspection, closely scrutinizing every part. The framing and car bodies generally differed very little from one another except in some minor points, all being more or less in accordance with the original specification drawn up in February, which left the arrangement of doors, ladders, trucks and a few other parts an open question for future consideration. The greatest variety in designs appeared in the doors and trucks, some of which displayed much novelty and answered the intended object, but would scarcely be considered desirable for ordinary freight cars, and certainly would not be acceptable for a general railroad equipment.

Most of the trucks were made from the pattern recently adopted by the New York Central, but in order to dispense with their wood transoms, various designs in iron were substituted. One pattern had a plain top and bottom bar filled in with bar iron in twisted lattice form; another had plate iron sides strengthened with cast iron strut ribs; and a third one had plain channel-bars. One of the Michigan Central cars had Thielsen trucks entire, modeled on their latest pattern, which appeared to give most general satisfaction for its simplicity and strength.

All of the eight-wheel trucks had swing-bolsters. The bolster springs were chiefly "nests" and elliptics.

Several kinds of draw-bars were applied, including wrought, cast and malleable iron. Two of the Lake Shore cars were equipped with Ames automatic couplers, which underwent some severe test trials satisfactorily, the coupling and uncoupling being certain and safe under each test. There were also two cars equipped with Doyle's automatic coupler, which also stood some good tests, although in its present crude shape it was scarcely in a fair condition for exhibition. Several of the Safford draw-heads were also conspicuous, and met with very great approval.

All of the cars were fitted with Hoit's patent improved draw-bar, which is much superior to the ordinary kinds, and in some respects superior to the continuous bar, inasmuch as it gives an elasticity to each car, and in effect equals the continuity of the continuous bar without its disadvantages.

Taking the cars as a whole, they made a favorable impression by their appearance and good workmanship, although there had been no attempt at any special feature of excellence beyond what should be expected of well-made cars coming from any respectable builder.

After the inspection, the representative car-builders met for consultation, and completed their provisional specification for a standard car, and some of the sample cars were ordered to be sent to the West Albany shops of the New York Central for reference while building a standard car from the remodeled specification.

Taking this idea of making a general standard, even for the roads immediately concerned, it is one of the most important steps ever made in this direction, and it is not unlikely that very many of the connecting trunk roads will see the importance of adopting a similar course, and will naturally fall in with the new arrangements for all future supplies of car stock.

Among the gentlemen present at the inspection were the following:

Leander Garey, General Master Car-Builder New York Central & Hudson River Railroad.
John Ortton, General Master Mechanic Canada Southern Railway.
John Kirby, General Master Car-Builder Lake Shore & Michigan Southern.
Robert Miller, General Master Mechanic Michigan Central.
David Holt, Master Car Builder, Eastern Division New York Central.
C. E. Garey, Master Car Builder, Harlem R. R.
E. H. Olmstead, Master Car-Builder Western Division New York Central.
David White, Master Car-Builder Eastern Division New York Central.
J. H. F. Wiers, General Master Mechanic New York, Pennsylvania & Ohio.
Frank Wilder, Superintendent of Motive Power New York, Lake Erie & Western.
Milton Wilder, Master Car-Builder Western Division, New York, Lake Erie & Western.
Sanford Keeler, General Superintendent Flint & Pere Marquette.
James Withycome, Master Car-Builder Lake Shore & Michigan Southern, Buffalo Division.
William P. Taylor, General Manager Canada Southern.
George H. Burrows, Superintendent Western Division New York Central.
William B. White, Master Car-Builder Central Division New York Central.
F. D. Bray, Division Master Car-Builder Lake Shore & Michigan Southern.
John S. Lentz, Master Car-Builder Lehigh Valley.
Thomas West, Master Mechanic Buffalo Division New York, Lake Erie & Western.
E. E. Carver, Master Mechanic Canada Southern.
J. T. Leighton, Continuous Draw-Bar Co.
Joseph Taylor, Secretary, and John McGregor, Superintendent of the Michigan Car Works, Detroit.
C. R. Woodin, of the Jackson & Woodin Company, Berwick, Penn.
Allen Middleton, of the Middleton Spring Company, Philadelphia.
A. French, Pittsburg.
J. E. French, Cleveland, of the Winslow Car Roofing Company.
J. T. Wilson, of Wilson, Walker & Co., Pittsburg.
George M. Sargent, Congdon Brake Shoe Company.
W. W. Snow, Ramapo Wheel Works.
J. B. Safford, Safford Draw-Bar.

THE MASTER MECHANICS' AND CAR-BUILDERS' ASSOCIATIONS.

These associations are about to hold their regular meetings for the current year. The leading purpose of their organization was to promote greater efficiency in the machinery and car departments of railroads by improved construction and appliances, and also to diminish, as far as practicable, the cost of the operation and maintenance of rolling stock. Although much has been done toward the attainment of these objects during the twelve years of their existence, it will readily be admitted that neither of these associations has been able to accomplish all that could be desired in these respects. Probably no association of any kind, however useful and progressive it may be, ever fully reaches the ideal standard of being all that it should be. There are always defects in organization and in methods of working, that operate as a drawback to its usefulness. These defects may be of such minor importance as to be easily remedied, or they may be so radical in their nature as to endanger the very existence of the society. Any one who is at all familiar with the doings of the two associations named, for the past few years, as set forth in the published record of their proceedings, can hardly fail to note a lack of that kind of progress that should attend a healthy vitality—a progress indicated by a steady increase of membership, and greater effectiveness and economy in machinery and car construction. In this latter respect, there has been some progress to be sure, and much of it is doubtless due to the influence and working of these twin organizations. But it has been in such an indirect way, that the source has not been recognized to the extent that it should have been.

The pertinent question is, What is it that keeps these organizations practically at a stand-still? They do not advance, and apparently they do not retrograde, but seem to maintain a kind of stationary position. This can not be due to any inherent incapacity of the members collectively to deal with the subjects which come before them, nor can it be owing to any lack of interest or importance in the subjects themselves. The money expenditure involved in the operations of the machinery and car departments of 80,000 miles of railroad, amounts to an annual sum that may be reckoned by hundreds of millions, and whatever can be saved of this vast outlay by improved construction and greater economy in operation and management, increases by so much the net earnings. Here is an immense responsibility assumed by these departments, or at least by those who control them—not nominally, but really. Authority and responsibility must needs go hand in hand. They can not be divorced. It is absurd to hold master mechanics and car-builders responsible in determining vital questions of construction, if they are merely foremen, instead of being the heads of their respective departments. We fear that upon too many roads they are deprived of the authority which rightfully belongs to them by virtue of their knowledge and experience, and that matters of which they are, or should be, the best judges, are virtually taken out of their hands, and determined by the managers and superintendents who outrank them in position, but who are often very deficient in the special technical knowledge pertaining to the particular work in hand. The better judgment of the heads of the machinery department is overruled, and they are forced to do what they know is not for the best interests of the roads, in order to preserve harmonious relations with the higher authorities. The master mechanic or car-builder, for the sake of his reputation, works with diligence and skill within the range of his tether, while he clearly sees that if his discretion was less hampered, he could do a great deal better for his employers and for himself too. The more the heads of these departments are subordinated to superintendents, managers and presidents, as respects what is legitimately within their sphere, the more is their sense of responsibility weakened, and their pride of position destroyed. A really capable man feels that he only fills the position nominally, that his title is a mere make-believe, and that his authority is really limited to superintending the men under him.

This state of things—which, according to the best information we can obtain, is not exaggerated—tends, of course, to diminish the interest of mem-

bers in the proceedings of the annual meetings of these associations, and also prevents the infusion of new life into them by the accession of new members. There are also other reasons for the apparent apathy and indifference which have existed of late. The methods heretofore employed for procuring the necessary information for committee reports have proved inadequate. In the absence of such information, the committees must fall back on their own unaided resources, and if these are not sufficient to justify the making of a report, there is nothing to do but to drop the subject in hand or discuss it in a haphazard, off-hand way—such discussions usually being short-lived and superficial, and resulting in nothing but a wide diversity of opinion in many cases, with no facts or figures that can be relied upon to test which is right or wrong. Considering that there are some 800 railroads in the country in regular operation, and that the most of them have regularly organized car and locomotive departments, the associations which represent them should have a much larger living membership than is shown on the published lists, and especially should there be a much larger number of responses at the roll-call of the annual meetings. These associations, so long as they are not directly sustained by the intelligent coöperation of managers and superintendents, as well as by the many capable master mechanics and car-builders in the country who hold themselves aloof from joining them, can hardly be expected to make any greater progress than they have in the past. As for any positive retrograde movement, we do not look for it. The meetings to be held this month and the next, will reveal any tendency in that direction. If there is any thing in these organizations that needs reforming, any old ruts to get out of, or bad practices that should be abolished in order to induce a portion of the large number of master mechanics and car-builders who remain outside of them to become members and take part in the deliberations, the matter should receive careful attention. Or, if outsiders are really deterred for any such reasons, it would perhaps be better if they would come in without further waiting, and help carry into effect the reforms they desire. These associations, however restricted their influence and power may have been in the past, ought to share in the new life and prosperity of railroad business in spite of the disabilities under which they now labor, and it is to be hoped that the meetings at Cleveland and Detroit will afford gratifying evidence of this.

LOCOMOTIVE BOILERS—IRON vs. STEEL.

For years past, a committee of the Master Mechanics' Association has been investigating the general subject of locomotive boiler construction, with respect to methods, forms, proportions, materials, etc. The reports submitted from year to year contain a great deal of interesting information upon all these points, but without settling very conclusively any one of them. In regard to the best material for the shell and fire-boxes, it is important to determine the respective merits of steel and iron; but the evidence in this particular, as contained in the committee's report made last year, is somewhat bewildering. Boilers made of each material corroded, pitted and furrowed very unequally, the results being diametrically opposite upon different roads and in different localities. Mr. Hayes, of the Illinois Central, has several engines, the boiler shells of which are made of Low-Moor iron. They have been in service 23 years, with but little sign of corrosion or pitting in the sheets, those in the bottom of the boiler having never been renewed, and being to all appearance in good condition. In 1874, he built two new engines, the boiler shell of one being of a high grade of steel, and the other of iron. Both were put in the same service, on the same section of the road, and made equal mileage. The steel boiler suffered most from corrosion and pitting, while the iron one was but slightly corroded. Another "open hearth" steel boiler, built in 1876, showed similar results; in fact, all the steel boilers built by the company within a period of five years pitted and corroded worse than the iron ones.

In marked contrast with this experience, Mr. J. M. Boone, of the western division of the Pittsburg, Fort Wayne & Chicago road, holds that steel is the best material for boilers, with either coal or wood as fuel. His first steel boilers were built in 1871, and there had been no pitting, furrowing or corrosion inside of them; while iron boilers of the same size, performing the same service and using the same water, corroded so badly in six years, that the sheets had to be renewed. Mr. Sedgley, of the Lake Shore road, gives similar testimony in favor of steel. Mr. Fuller, of the Atlantic & Great Western, had also obtained the best results from steel, although the boilers made of it were not entirely free from furrowing. The fire-boxes also furrowed on top of mud-ring, especially when lime water was used.

Various theories are advanced to account for these contradictory results, the most plausible of which relate to the impurities in the water used; lime water having a more injurious effect, apparently, upon steel crown-sheets than upon iron. Furrowing, according to the report, at seams, curves and where braces are attached, is easily accounted for, but pitting occurs at unlooked-for places, is a serious difficulty on some roads and on others is scarcely known. The particular cause of it is unknown, and also the remedy.

GOULD, SCOTT AND VANDERBILT.

A writer in the *Industrial World*, of Chicago, sees one of the "gravest problems of the age" looming up in the near future. It is a railroad problem, and grows out of the circumstance that the three persons above named control 18,265 miles of railroad, and can influence the votes, not only of officers and men connected with the roads, but of the communities contiguous thereto. It is furthermore alleged that the interests of these three magnates being identical, they can, if they choose, unite to oppress the public, by extorting unfair and unjust rates for transportation. This state of things, it must be admitted, looks very frightful, so far as a mere surface view is concerned; but even the writer is consoled by the reflection that the votes of three common laborers will, after all, count as much as those of the three autocrats aforesaid.

There is a great deal of this kind of talk floating through the newspapers. Like steam escaping through a safety valve, it does no harm and much good. What may be a possible contingency will be next to impossible so long as there are lively apprehensions that it is likely to occur. If these alarmists, instead of letting their minds dwell so exclusively on the threatening side of the problem, would scan more carefully the principles which underlie it, they would probably feel less concern about oppression and extortion. Messrs. Gould, Scott and Vanderbilt are business men; and moreover, they are mortal like other people, and are liable to drop off any day or year. The corporations they control are the creatures and subjects of law, mere common carriers on a large scale, who can not get much beyond their legitimate sphere without endangering their own existence. To willfully and wickedly oppress their customers, by refusing to carry freight at fair rates, would not only be idiotic, so to speak, but would precipitate a contest, the issue of which would be neither long nor doubtful—a contest in which the corporations would suffer far more than the public. Such a course would not only be suicidal by courting unpopularity, but would generate cut-throat rivalries among themselves, the inevitable effect of which would be, as it has been in the past, to reduce traffic rates and dividends to a vanishing point. No business enterprise can be successfully conducted without a responsible head, and the longer and more extended the business the greater the capacity required for its management. The man who controls a leading line of railway or a consolidated system of lines, is not an autocrat in his particular sphere, save in so far as his control is made subservient to the public good in a greater degree than would be the control of some one else of inferior capacity. The chief concern of such men as the trio named above is to make the properties they control productive in the way of earnings. The golden egg is what they prize more than all else, and they are not so stupid as to kill the goose, etc.

FOUR AND SIX-WHEEL TRUCKS.

An exchange makes the suggestion that with the improved rail joints and road beds of many roads, together with the use of 42-inch wheels for passenger cars, there will no longer be any necessity for six-wheel trucks, which have so long been considered indispensable in securing steadiness of motion and diminished wear of track. It may be that the suggestion will prove to be a sound one so far as the 42-inch wheels are concerned, but we can not see that the comparative advantages of six-wheel trucks are much lessened by improved roadway and track. These trucks are used under the heavier cars, because they allow the weight to be distributed upon six journals instead of four, thus diminishing the liability to heat, as well as the force of the blow upon the rails delivered by each wheel. They also, in consequence of a longer wheel base, and the equalizing springs being placed further apart, cause the car body to ride with greater steadiness. These advantages are secured, of course, at the cost of hauling the additional weight of one axle and two wheels for each truck, to say nothing of a longer and heavier truck frame. All the cars now running on twelve wheels, could, no doubt, run upon eight with but little perceptible difference as respects the comfort of passengers; but the same mechanical reasons that now exist for preferring twelve wheels to eight, would still remain, unless modified by the introduction of 42-inch wheels.

There has been a good deal of theorizing in regard to the comparative merits of large and small wheels—42 and 33-inch—and it seems likely that the truth will only be ascertained by a more prolonged trial of the former than has yet taken place. It is generally conceded, we believe, that both sizes are safe enough, and that on a first-class steel rail track there is not much difference in the riding—the number of wheels in a truck being the same. It is also admitted that the large wheels get over obstructions easier, and do not wear out brasses as fast as the smaller ones. But in regard to draft power upon grades or level track, it is yet to be demonstrated that any thing is saved in the use of the large wheels. The law of gravitation applies equally to both sizes; or, if it really does not, Mr. Dudley's dynograph should have made the discovery before this time. The Boston & Albany road has for months past been running an express train with 42-inch wheels, but with no saving in the consumption of fuel, according to the latest accounts. It is said that the Pullman Company have of late built several cars with four-wheel trucks and 42-inch wheels, the trucks having a wheel base of 8 feet, and the axles $3\frac{1}{4} \times 8$-inch journals. The length of the car bodies is not stated, nor the weight per wheel; but the running performance of these cars will be watched with interest as a demonstration of the economy and

practicability of substituting trucks of this description for the six-wheel trucks now in general use under heavy cars.

THE WORK BEFORE THE CONVENTION.

The following subjects are in the hands of committees appointed by the Master Car-Builders' Association at their last year's meeting, and upon which reports are expected to be made at the meeting to be held at Detroit on the 8th of June :

1. Train brakes for freight cars.
2. The substitution of steel for iron, and iron for wood, in car construction.
3. The inspection and small repairs of freight cars.
4. Improvements in cars during the current year.
5. The best diameter for cast-iron and steel-tired car wheels.
6. To recommend a form and the best dimensions for a standard draw-bar and draw-spring, and the best method of bringing about uniformity in their length and construction.
7. Whether it is desirable and economical to apply brakes to all the wheels of freight cars, and the best way of securing uniformity in their construction ; and to recommend standard forms and proportions for those parts of brakes that require most frequent renewal.
8. The causes of accidents to train-men, and what means can be provided to protect train and yard men from injury in the performance of their duties.
9. The present construction of screws and nuts used on cars, the degree of accuracy that is desirable, and the best means of maintaining it in the standard adopted by the Association, at Richmond, Va., in 1871.
10. Standard car-axles.

These subjects are none of them new. The most of them are the staple topics of inquiry that have been under consideration for years past, and embrace nearly all of the practical questions in car construction that are now pressing for a solution. There are of course many things pertaining to the economy of construction and operation both of passenger and freight cars, that do not admit of being definitely determined, and which are necessarily subjects for continuous investigation. The Association is an agency specially adapted to this work, and every year of its existence should be marked by some substantial progress in the recommendation of better and more uniform methods for promoting efficiency and economy in the car departments of railroads. Aside from things which in their nature must remain open questions, there are other problems apparently so simple and so purely mechanical, that they ought to have been disposed of before this time and dismissed from the docket.

Take for example the simple questions whether brakes should be applied to all the wheels of a freight car or only to part of them ; whether the brakes should be between or outside the wheels ; the comparative economy of cast or wrought iron brake-shoes ; the proper length of wheel base for average curves ; the best material for journal bearings ; whether wheels should be bored straight or tapering ; the position of brake wheels ; utility of check chains, etc. When it is considered that thousands of freight cars are constantly moving over our roads, and that they are subject to careful inspection in every detail, in order to keep up current repairs of wear and breakage, it would seem that the experience resulting from all this, would enable the Association to make a final disposition of some of these points by a vote nearly or quite unanimous, so as to suspend further inquiry and discussion, at least for the present. We mean a disposal of them so far as the action of the Association is concerned. Diversity in practice would of course still prevail on the roads, but the members of the Association would be a unit, and this would help more than any thing else to bring about greater uniformity.

The programme of subjects as given above, upon which reports are expected to be made by the standing committees, justifies the expectation that the convention next month will not only be largely attended, but that its proceedings will surpass in interest those of any preceding meeting of the Association, not even excepting that of last year at Chicago—the great nucleus from which railway trunk lines radiate like the spokes of a wheel.

NARROW GAUGE.

The narrow-gauge enthusiasm which prevailed so extensively two and three years ago has very perceptibly abated. But few new projects are announced, and whatever progress the old ones are making is in a quiet way that attracts but little attention. The last meeting of the Narrow-Gauge Convention was held in Cincinnati, in October, 1878, to "practically compare" the rolling-stock equipment, cost of construction and maintenance, earning capacities, and safety of investments, with respect to the standard and narrow-gauge systems. It was somewhat ostentatiously announced that the latter system had a great future "mission" to perform, especially in the new states and territories, by providing the means for cheaper local transportation and the development of traffic. Its advocates had then, and have had until quite recently, a great advantage in contrasting the cost of material and labor on the hard-times basis with the cost of the standard-gauge roads built on a basis of inflated values, watered stock, and the subsequent accumulations of a never-ending construction account, to say nothing of bad management, from which the new narrow-gauge roads were in advance assumed to be exempt. The committee reports and discussions at the Cincinnati convention, instead of throwing new and clearer light upon controverted points, were largely made up of unproved assumptions and loose generalities; and as far as specific details were given, the aim was obviously to draw attention to exceptional results and performances in narrow-gauge operation, as against the general statistics of standard gauge, in order to exhibit a contrast favorable to the former.

The three-feet gauge, however, is now fairly on trial in this country, and will be judged according to its merits. It will probably turn out in the end that so far as rails and rolling stock are concerned, a standard-gauge road can be equipped and operated in precisely the same manner as a narrow gauge, and at no greater cost, if its managers and owners so elect, thus realizing all the alleged advantages of lighter cars and engines, leaving the difference of 20½ inches in embankments, cuttings, tunnels and bridges, to be offset by the convenience of interchanging traffic with other standard-gauge roads without a transfer of freight. It must not fail to be noted in connection with this subject, that notwithstanding the admitted advantages of shorter and lighter cars with respect to dead weight—a strong point with the narrow-gauge people—the constant tendency is toward longer and heavier standard-gauge cars, and an increase of load over and above the old and nearly obsolete rule of ton for ton. This is the case everywhere, and especially upon leading western lines, upon one of which the actual weighing of upward of 20 loaded cars arriving on the same day in Chicago showed the average weight of the cars to be 20,560 lbs., and their average loads 24,320 lbs., while in many cases box cars of the same road carry 32,000, and even 35,000 lbs., and flat cars nearly as much. It is evident that if this tendency keeps on, the narrow-gauge theories as to the superiority of their own cars in regard to the relative proportions of dead and paying weight will become realized in the performance of standard-gauge cars, in spite of their heavier longitudinal timbers and trussing irons in order to sustain the weight of load between the points of support.

A New General Railway Map.—We have received from The National Railway Publication Company a mounted copy of the new railway map recently issued by them, a folded copy of which was sent out with the January number of the "Official Guide," and noticed in our February issue. The map is tinted, and embraces the entire railroad system of the United States, Canada and Mexico. Aside from its convenient size and comprehensiveness, the lines of road and names of places are given with great distinctness, which is a special merit in a railroad map. The geographical features of the new states and territories are clearly delineated, and reveal at a glance the progress of railroads and settlements in that vast area. It is a map that should have a place in every business office, as it has been prepared with great care and is as free from errors as such a work can be. A mounted copy is furnished to every annual subscriber to the "Official Guide." Published at 46 Bond street, New York.

The Coach Painter.—We have received the first two numbers of this neatly printed and illustrated monthly journal, published by Murphy & Co., Newark, N. J. The matter is original and varied, and of such a character as to be of interest and value to practical painters. Subscription price, $1 ; pages, 16 ; Chas. B. Sherron, editor and manager.

WE lately heard a desperate threat made by a man who was short of funds. He said he would have money—if he had to work for it.

A POET wrote a stirring ode on a victim of persecution, who was burned at the stake, in which occurred the line, "See the pale martyr in his sheet of fire !" of which the poet was especially proud; but the printer accidently got it, "See the pale martyr with his shirt on fire !"

Our Directory.

We note the following changes since our last issue. Readers are requested to give us prompt notice of changes when they occur :

Boston, Concord & Montreal.—Mr. W. A. Stowell has been appointed Assistant Superintendent.

Central Vermont.—Mr. Ambrose Arnold has resigned his position as Superintendent of the Central, Southern, Northern and Western Divisions. He has been connected with the road thirty years.

Chicago & Alton.—Mr. A. A. Ackerly has resigned the position of Master Mechanic, to take effect June 1.

Jeffersonville, Madison & Indianapolis.—Mr. J. R. Shafer has resigned the position of Superintendent, to accept that of Assistant General Manager of the Louisville & Nashville.

Louisville & Nashville.—Mr. James Montgomery, heretofore Superintendent of the Memphis Line, is appointed Superintendent of the St. Louis & Southeastern, and Evansville, Henderson & Nashville Divisions, with office in St. Louis, Mo. He is succeeded on the Memphis Line by Mr. Jas. T. Harrahon.

Louisville, New Albany & Chicago.—Mr. Geo. H. Ruhlandt, as Master Mechanic, will have charge of the shops, engine houses, motive power and rolling stock of the company.

Macon & Brunswick.—Mr. Jas. M. Edwards, late Superintendent of the Northeastern of Georgia, has been appointed Superintendent of this road.

Oregon Railway & Navigation Company.—Mr. T. F. Oakes, late Superintendent of the Kansas City, Fort Scott & Gulf, has accepted the position of Vice-President and General Manager of this company, with headquarters at Portland, Oregon.

Painesville & Youngstown.—Mr. Miles R. Martin has resigned the position of General Manager.

Panama.—Mr. B. Mozley, who has been Superintendent of this road for some years, has returned to this country in consequence of impaired health.

Pennsylvania.—Mr. P. F. Smith, Superintendent of the Bedford Division, has tendered his resignation. He has accepted the presidency of the Wellsville Plate & Sheet Iron Company, at Wellsville, Ohio.

Quebec, Montreal, Ottawa, & Occidental.—Mr. A Davis has been appointed Mechanical Superintendent for the whole line. He has been for some time Mechanical Superintendent of the Western Division only.

Directory of Master-Mechanics and Master Car-Builders

THROUGHOUT THE UNITED STATES AND CANADA.

REFERENCES.—* Mechanical Engineer. † Mechanical Superintendent. ‡ General Master Mechanic. †† Gen. Master Car-Builder. § Master of Machinery. ‖ General Foreman. ** Supt. of Machinery. §§ Supt. of Motive Power and Machinery. ‡‡ Supt. Cars and Buildings. ¶ Supt. of Equipment. ¶¶ Ass't Supt. of Equipment.

A

Railroad.	Master-Mechanic.	Master Car-Builder.	Residence.
Adirondack	Jacob Myers	James J. Traver	Saratoga, N. Y.
Alabama Central	Simon Gay	James Owens	Selma, Ala.
Alabama Great Southern	§§John McVey		Chattanooga, Tenn.
Albany & Susquehanna	§§R. C. Blackall	R. C. Blackall	Albany, N. Y.
Albany & Susquehanna	C. A. Jones	J. Skinner	Oneonta, N. Y.
Arkansas Midland	J. B. Johnson	J. B. Johnson	Helena, Ark.
Ashtabula & Pittsburg	Geo. J. Parkins	Wm. Marquis	Allegheny City, Pa.
Atchison, Topeka & Santa Fe	§§Geo. Hackney	Geo. Hackney	Topeka, Kan.
Western Division	A. C. Stiles		Pueblo, Col.
Atchison & Nebraska	C. D. Volk	T. A. H. Berkey	Atchison, Kan.
Allegheny Valley	G. W. Glass	R. Gunning	Pittsburgh, Pa.
Atlanta & Charlotte Air-Line	C. D. Wall	C. D. Wall	Atlanta, Ga.
Atlanta & West-Point	Wm. Rushton		Atlanta, Ga.
Atlanta & West-Point		R. D. Cole	Newnan, Ga.
Atlantic & North Carolina	Basil Manly		New Berne, N. C.
Atlantic, Mississippi & Ohio			
Norfolk & Peter. Division	J. T. Robinett	J. T. Robinett	Petersburg, Va.
Virginia & Tenn. Division	F. Sterk	W. A. Morgan	Lynchburg, Va.
Western Division	A. C. Stiles		Pueblo, Col.

B

Baltimore & Ohio	§John C. Davis	J. S. Shryack	Baltimore, Md.
Baltimore & Ohio	A. J. Cromwell	James H. Mill	Baltimore, Md.
Baltimore & Ohio	Wm. Edwards		Martinsburg, Va.
Baltimore & Ohio	I. N. Kalbaugh		Piedmont, Va.
Baltimore & Ohio	E. L. Weisgerber		Grafton, W. Va.
Baltimore & Ohio	Robert Maxwell		Cumberland, Md.
Baltimore & Ohio	Chas. Hirsch		Wheeling, W. Va.
Baltimore & Ohio	S. S. Crawford		Parkersburg, W. Va.
Central Ohio Division	O. B. Perkins		Zanesville, O.
Ohio & Chicago Division	§Sam. Houston		Newark, O.
Central Ohio Division	James Stewart		Newark, O.
Central Ohio Division	H. M. Ingler		Bellaire, O.
Lake Erie Division	And. Beckert		Sandusky, O.
Chicago Division	W. Y. Johnston		Garrett, Ind.
Chicago Division	F. J. Gunther		Chicago Junc., O.
Chicago Division	Geo. Wilson		Kingsbon, Ill.
Pittsburg Division	John E. Sampsel		Connellsville, Pa.
Baltimore & Potomac	§§R. T. Soule		Baltimore, Md.
Bath & Hammondsport	S. S. Reynolds		Hammondsport, N. Y.
Bedford, Springville, O. & Bloom'd	Capt. Geo. Elliott		Bedford, Ind.
Bellefonte & Snow Shoe	H. D. Landis	H. D. Landis	Bellefonte, Pa.
Bennington & Rutland	G. W. Blanchard		Rutland, Vt.
Boston & Albany	Wilson Eddy		Springfield, Mass.
Boston & Albany	A. B. Underhill		Boston, Mass.
Boston & Albany		F. D. Adams	Allston, Mass.
Boston & Albany	T. B. Purvis		Greenfield, N. Y.
Boston & Providence		J. E. Doran	E. Albany, N. Y.
Boston, Barre & Gardner	George Richards	John Lightner	Roxbury, Mass.
Boston, Concord & Montreal	Ralph Adams	L. D. Pickering	Worcester, Mass.
Boston & Maine	Wm. Smith		Lake Village, N. H.
Boston & Maine			Boston, Mass.
Boston & Lowell	J. F. Crockett	D. C. Richardson	Lawrence, Mass.
Boston & New York Air-Line		J. F. Crockett	Boston, Mass.
Boston, Revere Beach & Lynn	J. L. Folsom	John Coghlan	New Haven, Conn.
Brunswick & Albany	M. Thornton		Brunswick, Ga.
Burlington & Missouri River in Neb.	D. Hawksworth	D. Hawksworth	Plattsmouth, Neb.
Burlington, Cedar Rapids & Nor.	R. W. Bushnell		Cedar Rapids, Ia.
Burlington & Southwestern		A. B. Allen	Farmington, Ia.
Buffalo & Southwestern	J. G. Hubbard		Buffalo, N. Y.
Buffalo, New York & Philadelphia	Allen Vall		Buffalo, N. Y.

C

Cairo & St. Louis	**G. B. Simonds	G. B. Simonds	E. Carondelet, Ill.
Cairo & Vincennes	A. Van Tuyl	A. Van Tuyl	Carmi, Ill.
California, Pacific & Northern	D. Rutherford	D. Rutherford	So. Vallejo, Cal.
Camden & Atlantic	Rufus Hill	S. Wills	Camden, N. J.
Canada Central	H. J. Marshall		Brockville, Can.
Canada Southern and Brauches	*John Ortton	John Ortton	St. Thomas, Ont.
Canada Division	W. A. Short		St. Thomas, Ont.
U. S. Division	O. P. Dunbar		Grosse Isle, Mich.
Carolina Central	§Jas. Maglenn	S. R. Ethridge	Laurinburg, N. C.
Catasauqua & Foglesville	Tho. E. Evans	Chas. J. Holbach	Catasauqua, Pa.
Central of Georgia	D. D. Arden	C. C. Millar	Savannah, Ga.
Atlanta Division	D. M. Gugel	Jas. A. Knight	Macon, Ga.
Central of New Jersey	Wm. Woodcock	George Hackett	Elizabeth, N. J.
Lehigh & Susquehanna Div.	L. C. Bradtow	L. C. Brastow	Wilkesbarre, Pa.
Central of Iowa	M. C. Wheeler	T. L. Seevers	Marshaltown, Ia.
Central Pacific	‡A. J. Stevens	††Benj. Welch	Sacramento, Cal.
Western Division	Geo. D. Welch	W. B. Ludlow	Oakland, Cal.
Central Pacific		G. J. Turner	Sacramento, Cal.
Visalia Division	S. Johnson		Tulare, Cal.
Sacramento & Oregon Div.	M. W. Cooley	Phil. Douglass	Sacramento, Cal.
Truckee Division	Geo. Gregg	Wm. Mortherson	Wadsworth, Nev.
Humboldt Division	W. F. Smith	J. C. Doughty	Carlin, Nev.
Salt Lake Division	Jas. Lamb		Terrace, Utah.
Salt Lake Division		A. Sherburne	Ogden, Utah.
Central Vermont	§§J. M. Foss		St. Albans, Vt.
New London & Northern Div.	J. W. Dow	S. O. Banks	New London, Conn.
Rutland Division	N. L. Davis	N. L. Davis	Rutland, Vt.
Chesapeake & Ohio	§John McFarland	J. N. King	Richmond, Va.
Chesapeake & Ohio	Tho. L. Chapman	H. C. Bassinger	Huntingdon, W. Va.
Cheraw & Darlington	John Blessett	W. H. Day	Florence, S. C.
Cherokee	P. J. Bracken		Cedartown, Ga.
Cheshire	F. A. Perry	A. E. Howard	Keene, N. H.
Chepaug	C. M. Allen	C. M. Allen	Litchfield, Conn.
Charlotte, Columbia & Augusta		J. C. Trweger	Columbia, S. C.
Chicago & Pacific	James Penny	C. N. Code	Chicago, Ill.
Chicago & Northwestern	** Geo. W. Tilton	††William Campbell	Chicago, Ill.
Wis., Mad. & Mill. Divis.			Chicago, Ill.
Galena Division			Chicago, Ill.
Iowa Division	J. O. Chapman	H. L. Preston	Clinton, Ia.
Peninsula Division	Geo. White		Escanaba, Mich.
Winona & St. Peters Div.	W. A. Scott	W. A. Scott	Winona, Minn.
Chicago & Alton	§§A. A. Ackerly		Bloomington, Ill.
Chicago, Burlington & Quincy	§§H. B. Stone	*J. Chistiansen	Aurora, Ill.
Galesburg Division	Robert Colville		Galesburg, Ill.
Iowa Division	Joel West		Burlington, Ia.
Iowa Division	C. W. Eckerson		Creston, Ia.
St. Louis Division	H. Whiting		Beardstown, Ill.
Chicago & Springfield	W. H. McKenna		Clinton, Ill.
Chicago, Clinton, Dubuque & Minn.	E. Smedley	E. Smedley	Dubuque, Ia.
Chicago, Rock Island & Pacific	†T. B. Twombly	B. K. Verbryck	Chicago, Ill.
Keokuk & Des Moines Div.	S. W. Wakefield	Henry Kummer	Keokuk, Iowa.
Southwestern Division	R. O. Carscadin		Trenton, Mo.
Chicago & West Michigan	Russell Booth		Muskegon, Mich.
Chicago & Eastern Illinois	Allen Cooke	Allen Cooke	Danville, Ill.
Chicago & Iowa	H. S. Bryan		Aurora, Ill.

Railroad.	Master-Mechanic.	Master Car-Builder.	Residence.
Chicago, Milwaukee & St. Paul	J. M. Lowry		Milwaukee, Wis.
La Crosse & P. Du. Ch. Div		John Bailie	Milwaukee, Wis.
Northern Division		Wm. E. Kittredge	Milwaukee, Wis.
Iowa & Minn. Division	J. O. Pattie		Minneapolis, Minn.
Racine & S. West Div	John Taylor	E. A. Eddy	Racine, Wis.
Sioux City & Dak. Div	J. H. Moulton		Yankton, Dak.
Chicago & Paducah	T. J. Grosh	T. J. Grosh	Streator, Ill.
Chicago, Pekin & Southwestern	A. R. Overton		Joliet, Ill.
Chicago, Pekin & Southwestern		A. S. Jackson	Streator, Ill.
Chicago, St. Louis & New Orleans	**W. H. Purdy		McComb C'y, Miss.
Chicago, St. Louis & New Orleans	E. D. Anderson		McComb C'y, Miss.
Chicago, St. Louis & New Orleans	J. M. Keith		Jackson, Tenn.
Chicago, St. Louis & New Orleans	J. F. White		Water Valley, Miss.
Chicago, St. Paul & Minneapolis	Matt Ellis	J. C. Fischer	Huron, Wis.
Cincinnati, Wabash & Michigan	S. B. Tinker	S. B. Tinker	Wabash, Ind.
Cincinnati, Hamilton & Dayton	James Eckford	W. H. H. Allison	Cincinnati, O.
Indianapolis Division	Edward Moore		Indianapolis, Ind.
Cincinnati, Lafayette & Chicago	J. B. Morgan	J. B. Morgan	Lafayette, Ind.
Cincinnati, Richmond & Chicago	Wesley S. Brewer		Richmond, Ind.
Cin. Rockport & So. Western	B. W. Smith	J. H. Bauman	Rockport, Ind.
Cincinnati, Sandusky & Cleveland	B. J. Gregg		Sandusky, O.
Cincinnati Southern	Tho. Price	Geo. Butler	Cincinnati, O.
Cleve., Col., Cin. & Indianapolis	‡L. S. Young	††L. S. Young	Cleveland, O.
Indianapolis Division	A. R. McAlpine		Brightwood, Ind.
Columbus & Cin. Division	F. G. Kaufholz	Wm. Cleave	Cleveland, O.
Cleveland & Pittsburg	N. E. Chapman	A. Steinbrunner	Cleveland, O.
Cleve., Mt. Vernon & Columbus	J. W. Holloway	J. W. Holloway	Akron, O.
Cleve., Tusc. Valley & Wheeling	W. F. Turreff	Geo. H. Pratt	Black River, O.
Cobourg, Peterboro & Marmora	Wm. Polson		Cobourg, Canada.
Columbus & Hocking Valley	I. G. Hutchins	J. M. Rockafield	Columbus, O.
Columbus & Toledo	I. G. Hutchins	J. M. Rockafield	Columbus, O.
Concord	J. T. Gordon	J. T. Gordon	Concord, N. H.
Concord & Portsmouth	J. T. Gordon	J. T. Gordon	Concord, N. H.
Concord & Claremont	**J. N. Lauder		Concord, N. H.
Connecticut River	§Wm. H. Stearns	R. Hitchcock	Springfield, Mass.
Connecticut Valley	S. E. Brewer	S. E. Brewer	Hartford, Conn.
Connecticut Western	John C. Barton		Hartford, Conn.
Conn. & Passumpsic Rivers	John R. Rubbard		Lyndonville, Vt.
Corning, Cowanesque & Antrim	O. C. Patchell	O. C. Patchell	Corning, N. Y.
Cumberland Valley	A. S. Hull	G. W. Nitterhouse	Chambersburg, Pa.
Cumberland & Pennsylvania	N. W. Howson	Nathan Binnix	Mt. Savage, Md.

D

Dak. So. & Sioux City & Pembina	J. H. Moulton	J. H. Moulton	Yankton, Dak.
Danbury & Norwalk	N. M. George	N. M. George	Danbury, Conn.
Danville & Southwestern	R. L. Baldwin		Danville, Ill.
Davenport & Northwestern	H. E. Woods		Davenport, Ia.
Dayton & Union	H. S. Gordon	H. S. Gordon	Dayton, O.
Dayton & Southeastern	Wm. E. Cooper		Dayton, O.
Dayton & Michigan	John Black		Lima, O.
Delaware, Lackawanna & West	Walter Dawson	Robert McKenna	Scranton, Pa.
Morris & Essex Division	W. H. Lewis		Kingsland, N. J.
Morris & Essex Division		J. W. Baker	Dover, N. J.
Oswego & Syracuse Division	James Buchanan		Syracuse, N. Y.
Utica, Chenango & Susq. Div.	Tho. Thatcher		Utica, N. Y.
Bloomsburg Division	Charles Graham		Kingston, Pa.
Delaware & Chesapeake	Jos. A. Bayard		Easton, Md.
Delaware & Hudson Canal Co	**R. C. Blackall		Albany, N. Y.
Delaware & Hudson Canal Co		T. Orchard	Carbondale, Pa.
Rensselaer & Saratoga Div.	J. L. Corey	John Wicks	Green Island, N. Y.
Denver Pacific	§R. McDougall	John Clock	Denver, Col.
Denver & Rio Grande	N. W. Sample	N. W. Sample	Denver, Col.
Denver, South Park & Pacific	James Kirk	James Kirk	Denver, Col.
Des Moines & Fort Dodge	John McGrayel	R. Merrill	Grand Junction, Ia.
Detroit & Bay City	R. P. Baillie		Bay City, Mich.
Detroit, Grand Haven & Mil.	Fred Parker		Detroit, Mich.
Detroit, Lansing & Northern	G. C. Watrous	G. C. Watrous	Ionia, Mich.
Dorchester & Delaware			Cambridge, Md.
Dunkirk, Allegheny Val. & Pitts	J. C. Haggett	J. C. Haggett	Dunkirk, N. Y.

E

East Broad Top	Wm. C. Maynes		Orbisonia, Pa.
Eastern			East Boston, Mass.
Eastern Kentucky	D. L. Weaver	D. L. Weaver	Riverton, Ky.
E. Tennessee, Virginia & Georgia	C. A. Hodge	Joseph Armbruster	Knoxville, Tenn.
Erie & Pittsburg	J. N. Wood	J. N. Wood	Erie, Pa.
Eureka & Palisade	J. M. Alson		Eureka, Nev.
European & North Am. (of Maine)	A. O. Bailey	A. O. Bailey	Mattawamke'g, Me.
Evansville & Terre Haute	John L. White	Joseph Stiker	Evansville, Ind.
Evansville, Terre Haute & Chic.	§§W. D. Macfarlane		Terre Haute, Ind.

F

Fitchburg	§§Geo. A. Cooledge	Enos Varney	Charlestown, Mass.
Vermont & Mass. Div.	W. A. Foster	Jacob Marsh	Fitchburg, Mass.
Flint & Pere Marquette	T. J. Ratswell	T. J. Ratswell	E. Saginaw, Mich.
Florida Central	James S. McElroy	James S. McElroy	Jacksonville, Fla.
Flushing, North Shore & Central	Thomas Meehan	Edward Riley	L. I. City, N. Y.
Fort Wayne & Jackson	C. W. Hollister		Jackson, Mich.
Fort Wayne, Muncie & Cincinnati	Wm. McPhail	Wm. McPhail	Fort Wayne, Ind.

G

Galv., Harrisburg & San Antonio	D. T. Davis		Harrisburg, Tex.
Galveston, Houston & Henderson	R. B. Small		Galveston, Tex.
Geneva, Ithaca & Sayre	J. N. Weaver		Waverly, N. Y.
Geneva, Ithaca & Sayre		E. R. Brown	Packerton, Pa.
Georgia	John S. Cook	T. M. Preval	Augusta, Ga.
Grand Haven	A. S. Parish		Allegan, Mich.
Grand Tower & Carbondale	Hugh Smith	Hugh Smith	Grand Tower, Ill.
Grand Trunk	†Herbert Wallis	Wm. McWood	Montreal, Canada.
Grand Trunk	Warren Noyes		Gorham, N. H.
Grand Trunk		Duncan Menish	Portland, Me.
Grand Rapids & Indiana	J. M. Boon		Fort Wayne, Ind.
Grand Rapids & Indiana	J. R. Fish	J. R. Fish	Grand Rapids, Mich.
Grand Rapids & Indiana	C. H. Cory		Mattoon, Ill.
Great Western, of Canada	*C. K. Donville		Hamilton, Can.
Great Western, of Canada	C. F. Hanson	Henry Childs	London, Ont.
Green Bay & Minnesota	Edw. Osborne		Green Bay, Wis.
Greenville & Columbia	W. J. Parrish		Helena, S. C.

H

Hanover Junction & Gettysburg	John J. Bingley	Henry Britcher	Hanover, Pa.
Hannibal & St. Joseph	Tho. G. Gorman	Tho. G. Gorman	Hannibal, Mo.
Housatonic	N. Slingland	J. J. Ferris	Falls Village, Conn.
Houston, East & West Texas	J. E. Wiggin		Houston, Tex.
Houston & Texas Central	L. C. Noble	James McGee	Houston, Tex.
Huntingdon & Broad Top	Wm. Barkla		Saxton, Pa.

I

Illinois Central	**S. J. Hayes	W. B. Snow	Chicago, Ill.
Chicago Division	Henry Schlacks		Chicago, Ill.
South Division	David Oxley		Centralia, Ill.
North Division	J. B. Adams		Amboy, Ill.
Iowa Division	Thomas W. Place		Waterloo, Ia.
Springfield Division	W. B. McKenna		Clinton, Ill.
Illinois Midland	H. H. Osborn		Paris, Ill.
Illinois & St. Louis	J. H. Smith		Belleville, Ill.
Illinois & St. Louis		Charles Rothe	E. St. Louis, Ill.
Indianapolis, Cin. & Lafayette	J. S. Patterson	J. S. Patterson	Cincinnati, O.
Indianapolis, Decatur & Springfield	Pulaski Leeds		Indianapolis, Ind.
Indianapolis, Peru & Chicago	John McKenna	John McKenna	Peru, Ind.
Indianapolis & St. Louis	A. J. Sanborn	A. J. Sanborn	Mattoon, Ill.
Indiana, Bloomington & Western	C. A. Thompson	H. Ford	Urbana, Ill.
International & Great Northern	John G. Conlon	W. H. Martin	Palestine, Tex.

Railroad.	Master-Mechanic.	Master Car-Builder.	Residence.
Intercolonial	†H. A. Whitney	Edw. Shaffer	Moncton, N. B.
Iron	Perry Scott	Clem. Roetling	Ironton, O.

J

Jacksonville, Pensacola & Mobile	John P. Laird		Tallahassee, Fla.
Jeffersonville, Mad. & Indianapolis	Wm. Swanston	J. D. McIlwain	Jeffersonville, Ind.
Jeffersonville, Mad. & Indianapolis	B. J. Miller		Jacksonville, Ill.
Jacksonville, N. West. & S. East.	P. T. Butterfly	P. T. Butterly	Girard, Kan.
Joplin	J. A. Maguire		Lewes, Del.
Junction & Breakwater			

K

Kansas City, Ft. Scott & Gulf	W. D. Rowley		St. Joseph, Mo.
Kansas City, Fort Scott & Gulf	J. S. McCrum	A. N. Montier	Kansas City, Mo.
Kansas City, Lawrence & South'n	J. S. McCrum		Kansas City, Mo.
Kansas City & Eastern	J. H. Burnham	J. H. Burnham	Independence, Mo.
Kan. City, St. Jo. & Coun. Bluff	Wm. D. Rowley	Theo. Aylesbury	St. Joseph, Mo.
Kan. City, St. Jo. & Coun. Bluff	Wm. McCall		Leavenworth, Kan.
Kansas Central	**John MacKenzie	T. B. Roberts	Armstrong, Kan.
Kansas Pacific	James Long		Armstrong, Kan.
Kaw Valley Division	John B. Daily		Ellis, Kan.
Smoky Hill Division	R. McDougal	John Clock	Denver, Col.
Denver Division	J. R. Ledyard	J. L. Hackathorn	Covington, Ky.
Kentucky Central	E. Bolton	C. L. Turner	Bath, Me.
Knox & Lincoln			

L

Lake Erie & Western	**Everett Clemens		Fremont, Ohio.
Lake Erie & Western	†H. L. Cooper		Lafayette, Ind.
Lake Ontario Southern	Geo. Thompson	Wm. Currier	Sodus Point, N. Y.
Lake Shore & Michigan Southern	†James Sedgley	††John Kirby	Cleveland, Ohio.
Michigan Southern Division	Geo. W. Stevens		Elkhart, Ind.
		Frank O. Bray	Adrian, Mich.
Toledo Division	J. M. Sanborn	W. O. Smith	Norwalk, Mich.
Erie Division	L. O. Gassett	J. Withycombe	Cleveland, Ohio.
Buffalo Division	Edward Studley	A. C. Robson	Buffalo, N. Y.
Lehigh Valley	John I. Kinsey		South Easton, Pa.
Lehigh Valley	P. Hofecker		Weatherly, Pa.
Lehigh Valley	John Campbell		Delano, Pa.
Lehigh Valley	D. Clark		Hazleton, Pa.
Lehigh Valley	A. Mitchell		Waverly, Pa.
Lehigh Valley		E. R. Brown	Mauch Chunk, Pa.
Lehigh Valley	James Eblin	James Malone	Argenta, Ark.
Little Rock & Fort Smith	Joseph Taylor	Joseph Taylor	Arkans's City, Ark.
Little Rock, Miss. River & Texas	Jas. Velsir	J. S. Young	Los Angeles, Cal.
Los Angeles & Independence			New Albany, Ind.
Louisville, New Albany & Chicago	Geo. Ruhlandt	Geo. Ruhlandt	L. Isl'd City, N. Y.
Long Island	Thos. Meehan	Hugh Longest	Louisville, Ky.
Louisville, Cincinnati & Lexing'n	A. Schaeffer	A. Schaeffer	Louisville, Ky.
Louisville & Nashville	**Reuben Wells		Louisville, Ky.
Louisville Division	D. P. Rennie		Nashville, Tenn.
Nashville & Decatur Div	E. M. Humstone	J. P. Furguson	Birmingham, Ala.
South & North Ala. Div	C. W. White		Memphis, Tenn.
Memphis & Ohio Div	Wm. Adair		Bowling Green, Ky.
Clarksville Division	E. M. Humstone		Nashville, Tenn.
Ev., Hen. & Nashville Div			

M

Macon & Brunswick	R. Wagnon	R. Wagnon	Macon, Ga.
Maine Central	J. W. Philbrick	J. W. Philbrick	Waterville, Me.
Maine Central		C. H. Kenison	Augusta, Me.
Maine Central	J. T. Gordon	J. T. Gordon	Concord, N. H.
Manchester & Lawrence	Allan Stirling		New York, N. Y.
Manhattan Elevated	Thos. Robertson		Marietta, Ohio.
Marietta, Pittsburg & Cleveland	E. M. Bosley	E. M. Bosley	Chillicothe, Ohio.
Marietta & Cincinnati	W. H. Williams	H. D. Lyons	Marquette, Mich.
Marquette, Houghton & Onton'gn	G. M. Taylor	G. M. Taylor	Paducah, Ky.
Memphis, Paducah & Northern	Tho. Rennell	P. Twitchell	Argenta, Ark.
Memphis & Little Rock	§H. N. Burford	J. J. Kasey	Memphis, Tenn.
Memphis & Charleston	S. H. Edgerly		Jackson, Mich.
Michigan Central		††Robert Miller	Detroit, Mich.
Michigan Central			Manitowoc, Wis.
Milwaukee, Lake Shore & West'n	S. Charnly		Minneapolis, Minn.
Minneapolis & St. Louis	Tho. Downing	Tho. Downing	Mineral Pt., Wis.
Mineral Point	Robert Hay	Robert Hay	Hancock, Mich.
Mineral Range	George F. Coon		Memphis, Tenn.
Mississippi & Tennessee	Geo. Haszinger	S. J. Bolton	Pierce City, Mo.
Missouri & Western	A. C. Persing		Alexandria, Mo.
Missouri, Iowa & Nebraska	J. G. Crozier		Dennison, Texas.
Missouri, Kansas & Texas	H. H. Alexander		Sedalia, Mo.
Missouri, Kansas & Texas	**G. W. Cushing	John C. Barber	Parsons, Kan.
Missouri, Kansas & Texas	Wm. T. Small		St. Louis, Mo.
Missouri Pacific	§§John Hewitt	John Hodge	St. Louis, Mo.
Missouri Pacific	R. D. Grant		Sedalia, Mo.
Missouri Pacific	Geo. W. Walshe		Atchison, Kan.
Missouri Pacific	H. V. Faries		Montgomery, Ala.
Missouri Pacific	W. H. Thomas	Lewis Barham	Columbus, Ga.
Mobile & Montgomery	J. C. Albrecht	A. J. Nix	Whistler, Ala.
Mobile & Girard	R. H. Briggs	J. T. Booth	Macon, Miss.
Mobile & Ohio	John Fitzgerald		Jackson, Tenn.
Mobile & Ohio	M. T. Carson		Macon, Ga.
Mobile & Ohio	D. M. Gugel	James A. Knight	Algiers, La.
Montgomery & Eufaula	N. Tilton	Wm. O'Brien	
Morgan's Louisiana & Texas			

N

Nashua & Lowell	S. A. Davis	S. A. Davis	Nashua, N. H.
Nashville, Chattan'ga & St. Louis	James Cullen	J. G. Sawyer	Nashville, Tenn.
St. Louis Division	L. B. Salisbury	W. H. H. Price	Mt. Vernon, Ill.
	Henry Hanford	George W. Gray	Bridgeport, Ct.
Naugatuck	D. Hawksworth		Plattsmouth, Neb.
Nebraska	W. G. Vanbuskirk		Dutchess J'n., N. Y.
Newburg, Dutchess & Connecticut			Fredericton, N. B.
New Brunswick	P. A. Logan	P. A. Logan	St. Andrew's, N. B.
New Brunswick & Canada	Tho. Armstrong	G. Houlton	New Haven, Ct.
New Haven & Northampton	Henry Fox	John Sweeny	Wortendyke, N. J.
New Jersey Midland	W. C. Ennis		Jersey City, N. J.
New Jersey & New York	J. S. Drake		Manchester, N. J.
New Jersey Southern	Rufus Blodgett		Mobile, Ala.
New Orleans & Mobile	§Josiah Bettis		Susquehanna, Pa.
New York, Lake Erie & Western	§§F. M. Wilder		Jersey City, N. J.
New York, Lake Erie & Western	J. H. Vreeland		Jersey City, N. J.
New York, Lake Erie & Western		J. N. Mileham	Port Jervis, N. Y.
New York, Lake Erie & Western	J. Van Vechten	J. Van Vechten	Susquehanna, Pa.
New York, Lake Erie & Western	V. Blackburn		Elmira, N. Y.
New York, Lake Erie & Western		D. B. Goodell	Hornellsville, N.Y.
New York, Lake Erie & Western	George H. Griggs		E. Buffalo, N. Y.
New York, Lake Erie & Western	Tho. West	M. Wilder	Rochester, N. Y.
New York, Lake Erie & Western	Jos. Bradt		New York.
New York & Harlem	§§Wm. M. Strong		Morrisania, N. Y.
New York & Harlem		C. E. Garey	New York, N. Y.
New York Central & Hud. River		††Leander Garey	West Albany, N.Y.
New York Central Division	§§G. B. Van Vorst	D. Holt	Syracuse, N. Y.
New York Central Division	§§Henry Watkeys		E. Buffalo, N. Y.
New York Central Division	§§Amos Gould		Niagara Falls, N.Y.
New York Central Division	§§S. L. White	Richard Donaby	E. Buffalo, N. Y.
New York Central Division		E. A. Olmstead	New York, N. Y.
Hudson River Division	§§Wm. Buchanan	Peter Smith	E. Rochester, N.Y.
New York Central Division		W. B. White	Rochester, N. Y.
New York Central Division		Geo. Cummings	Middletown, N. Y.
New York, Ontario & Western	Edw. Minsbull		Boston, Mass.
New York & New England	§§Geo. E. Boyden	Elias E. Pratt	Norwich, Ct.
Norwich & Worcester Div	Richard Colburn	John W. Marden	New Haven, Ct.
New York, N. Haven & Hartford	§§H. Kettendorf	James Denver	Hartford, Ct.
Hartford Division	§§Jno. Henney, Jr.	L. Packard	Bay Ridge, L. I.
New York & Manhattan Beach	Lewis James		Meadville, Pa.
New York, Penn. & Ohio	†William Fuller	††J. H. F. Wiers	Meadville, Pa.
New York, Penn. & Ohio	J. A. Cooper	D. S. Dockstader	Cleveland, O.
New York, Penn. & Ohio	N. Wright	W. G. Huggard	

Railroad.	Master-Mechanic.	Master Car-Builder.	Residence.
New York, Penn. & Ohio		S. V. Smith	Kent, O.
New York, Penn. & Ohio	William Hill	J. W. Holmes	Galion, O.
New York, Penn. & Ohio		J. T. Fosdick	Salamanca, N. Y.
New York, Penn. & Ohio		Geo. Wilson	Dayton, O.
New York, Penn. & Ohio		G. W. Demarest	Baltimore, Md.
Northern Central	§§R. H. Soule		Baltimore, Md.
Northern Central	J. M. Coale		Elmira, N. Y.
Northern Central	James Strode	J. C. Dyott	Concord, N. H.
Northern New Hampshire	**Jas. N. Lauder		Toronto, Can.
Northern of Canada	Peter Clark	Peter Clark	Brainerd, Minn.
Northern Pacific	**A. P. Farrar	A. P. Farrar	Fargo, Dak.
Dakota Division	A. Rupert		New Tacoma, W. T.
Pacific & P. Oreille Div	C. Z. Sanders	Tho. G. Davis	Florence, S. C.
Northeastern		W. H. Day	Sancelito, Cal.
North Pacific Coast	James Walch	Geo. W. Prescott	Battle Creek, Mich.
Northwestern Grand Trunk	†K. Blackwell		

O

Ogdensburg & Lake Champlain	Abraham Klohs		Malone, N. Y.
Ohio & Mississippi	‡J. F. Sechler		Vincennes, Ind.
Ohio & Mississippi		J. P. Coulter	Aurora, Ind.
Ohio & Mississippi			Seymour, Ind.
Cincinnati Division	John Thumser		Vincennes, Ind
St. Louis Division	J. B. Wilson		Pana, Ill.
Springfield Division	E. K. Sechler		Boston, Mass.
Old Colony	J. K. Taylor	A. Gleason	Taunton, Mass.
B. C. F. & N. Bedford Div	Geo. W. Reynolds	Sam. E. Stevens	Portland, Oregon.
Oregon & California	§§I. Brandt		Dalles, Oregon.
Oregon Railway & Navigation Co	J. F. Curtis		

P

Paducah & Elizabethtown	W. D. Robb	W. D. Robb	Elizabethtown, Ky.
Palmesville & Youngstown	J. H. Jones		Painesville, O.
Panama	Thos. S. O'Brien		Aspinwall, U. S. C.
Parker & Karns City	Philip Davies	Wm. Wolford	Parker City, Pa.
Pensacola	R. G. Nichol		Pensacola, Fla.
Pensacola & Selma	R. H. Kelly		Selma, Ala.
Pennsylvania	§§T. N. Ely		Altoona, Pa.
Pennsylvania	H. D. Garrett	I. W. Van Houten	W. Philadelphia, Pa
Pennsylvania	E. L. Caum	Samuel W. Myers	Harrisburg, Pa.
Pennsylvania	G. W. Strattan	John P. Levan	Altoona, Pa.
Pennsylvania	D. O. Shaver	J. G. Stewart	Pittsburg, Pa.
Pennsylvania	L. A. Bosdevex	E. F. Bosdevex	Meadow Shops, N. J.
New Jersey Division		David H. Baker	Jersey City, N. J.
New Jersey Division	§§H. S. Hayward		Jersey City, N. J.
New Jersey Division	Tho. Kerr	P. S. Bogart	So. Amboy, N. J.
New Jersey Division	R. McDowell		Lambertville, N. J.
New Jersey Division	W. McAllister		Camden, N. J.
New Jersey Division	C. B. Street	M. H. Falls	Blairsville, Pa.
West Penn. Division	Isaac Adams		Pekin, Ill.
Peoria, Decatur & Evansville	R. F. Hurd	R. F. Hurd	Pekin, Ill.
Peoria, Pekin & Jacksonville	E. Deizerdt	E. Deizerdt	Peoria, Ill.
Peoria & Springfield	H. B. Andrews	J. W. Fleming	Petersburg, Va.
Petersburg	S. A. Hodgman	Wm. Lungren	Wilmington, Del.
Philadelphia, Wilmington & Balt	J. W. Wright	E. Lippincott	Camden, N. J.
Philadelphia & Atlantic City	§§Howard Fry		Williamsport, Pa.
	W. F. Beardsley		Sunbury, Pa.
Philadelphia & Erie	W. L. Forster		Renovo, Pa.
	W. L. Holman		Kane, Pa.
	W. T. Smith		Erie, Pa.
Philadelphia & Baltimore Central	S. D. Danfield	S. D. Danfield	Chester, Pa.
Philadelphia & Reading	*L. B. Paxson	John H. Rankin	Reading, Pa.
Catawissa Branch	W. H. Ellis	C. D. Ellis	Catawissa, Pa.
Germantown & Norris'n Div	Jackson Richards		Philadelphia, Pa.
North Penn. Division	Chas. Norton	C. W. Hammann	Philadelphia, Pa.
Southeastern Canada	Edwin Gross		Richford, Vt.
Piedmont Air Line	‡R. D. Wade		Richmond, Va.
Rich. & Danville Div		J. B. Vaughan	Richmond, Va.
North Carolina Div		J. C. Holt	Comp. Shops, N. C.
Pittsburg, Cincinnati & St. Louis	§§G. W. Rhodes		Columbus, O.
Little Miami Division	J. H. Setchel	John McVay	Cincinnati, O.
Little Miami Division		M. P. Ford	Columbus, O.
Little Miami Division	Robert Curtis	Tho. Chamberlin	Columbus, O.
Col., Cin. & Ind. Division	Geo. H. Prescott	Chas. H. Starr	Logansport, Ind.
Col., Cin. & Ind. Div	C. M. St. Clair		Indianapolis, Ind.
Col. Cin. & Ind. Division	Leroy Kells	Daniel Jewell	Lancaster, O.
Cin. & Musk. Val. Division	Ross Kells		Denison, O.
Pitts. Cin. & St. Louis Divis'n		A. K. Mansfield	Steubenvil, O.
Pitts. Cin. & St. Louis Div	Geo. Parkin	John Marquis	Allegheny, Pa.
Pittsburg, Fort Wayne & Chicago	J. M. Boon	Israel Lee	Fort Wayne, Ind.
Pittsburg, Fort Wayne & Chicago		J. J. Kirkland	Crestline, O.
Pittsburg, Fort Wayne & Chicago	John Monks		Oil City, Pa.
Pittsburg, Titusville & Buffalo	H. J. Bookhammer		Pittsburg, Pa.
Pittsburg, Virginia & Charleston	Wm. Lininger		Pittsburg, Pa.
Pittsburg & Lake Erie	S. W. Haines		Portland, Me.
Portland & Ogdensburg	Geo. H. Poor	W. G. Brewer	Brownsville, Tex.
Portland & Rochester	E. H. C. Tompson	David Dow	Woodstock, Ont.
Port Dover & Lake Huron	H. M. Aldrich	J. H. Milton	Port Royal, S. C.
Port Royal & Augusta	Geo. Riley		Poughkeepsie, N.Y.
Poughkeepsie, Hartford & Boston	John L. Driscoll		Charlotte't'n, P. E.I.
Prince Edward Island	St. Stronach	D. M. Fraser	Pascoag, R. I.
Providence & Springfield	G. T. Richardson		Providence, R. I.
Providence & Worcester	A. Griggs	A. Griggs	Bristol, R. I.
Providence, Warren & Bristol	Rufus Smith	J. Brightman	

Q

Quebec, Mont., Ottawa & Occidental	‡A. Davis		Montreal, Can.
Quincy, Missouri & Pacific			Kirksville, Me.

R

Raleigh & Augusta Air-Line	**B. R. Harding	B. R. Harding	Raleigh, N. C.
Raleigh & Gaston	**B. R. Harding	John H. Decker	Raleigh, N. C.
Rhinebeck & Connecticut	A. W. Quackenbush		Rondout, N. Y.
Rich., Fredericksburg & Potomac	H. Khun	W. H. Trainham	Richmond, Va.
Richmond & Danville	See Piedmont Air-Line.		
Richmond & Petersburg	John O'Brien	H. L. Carter	Richmond, Va.
Richmond & Petersburg	A. B. Armstrong	A. B. Armstrong	Richmond, Va.
Rich., York River & Chesapeake	G. W. Rendall	M. Markwood	Brownsville, Tex.
Rio Grande	H. M. Aldrich		Rochester, N. Y.
Rochester & State Line	A. J. Robbins		Peoria, Ill.
Rock Island & Peoria	Joseph Elder		Oswego, N. Y.
Rome, Watertown & Ogdensburg	Wm. H. Harris	Wm. H. Harris	Rome, Ga.
Rome, Georgia	O. W. Harbin	O. W. Harbin	

S

Saginaw Valley & St. Louis		H. C. Whiting	St. Louis, Mich.
San Francisco & Northern Pacific	Ed. Reynolds	J. D. Murphy	Donahue, Cal.
Savannah & Charleston	H. A. Ulmo	P. N. Raynal	Charleston, S. C.
Savannah, Florida & Western	§Charles Collins		Savannah, Ga.
Savannah & Memphis	R. A. Bridges		Opelika, Ala.
Scioto Valley	C. H. Cory	C. H. Cory	Portsmouth, O.
Seaboard & Roanoke	§§M. Pendleton		Portsmouth, Va.
Selma, Rome & Dalton	H. J. Hitton	W. W. Pierce	Selma, Ala.
Selma, Marion & Memphis	J. M. Levis		Marion, Ala.
Shenango & Allegheny	John Hickey	John Hickey	Shelbeygan, Wis.
Sheboygan & Fond du Lac	John Hickey		Greenville, Pa.
Shenango & Allegheny	Edw. Richardson		Litchfield, Ct.
Shepaug	C. M. Allen		Missouri Valley, Ia.
Sioux City & Pacific	C. H. Foster	C. H. Foster	Shakopee, Minn.
Sioux City & St. Paul	F. C. Butterfield	F. C. Butterfield	
Southern Pacific			San Francisco, Ca.
Northern Division	J. T. Wilson	F. N. Bellisle	Los Angeles, Cal.
Los Ang-les & Yuma Div	Jas. Velsir	J. S. Young	Tulare, Cal.
Tulare Division	S. Johnson		Charleston, S. C.
South Carolina	§P. J. Cochrane	Geo. H. Gramling	Auburn, N. Y.
Southern Central	Chas. G. Brown	H. Mooney	Hokah, Minn.
Southern Minnesota	J. B. Henney	J. B. Henney	Newark, Cal.
South Pacific Coast	Martin Carter	Martin Carter	

Railroad.	*Master Mechanic.*	*Master Car Builder.*	*Residence.*
Southwestern of Georgia	D. M. Gugel	James A. Knight	Macon, Ga.
Spartanburg, Union & Columbia	Wm. Platt	W. B. Brown	Spartanburg, S. C.
Spartanburg & Asheville	Wm. Platt	W. B. Brown	Spartanburg, S. C.
Springfield, Athol & Northeastern	W. E. Granger		Springfield, Mass.
Springfield Southern	F. W. Johnstone		Springfield, Mass.
State Line & Sullivan	J. O. Blight		Sorrington, Me.
Stockton & Copperopolis	John M. Fulton		Towanda, Pa.
Stonington & Providence	J. H. Anderson	J. H. Anderson	Stockton, Cal.
St. Croix & Penobscot	G. H. Corson	H. C. Tincker	Providence, R. I.
St. Johns	Jas. M. Owens		Milltown, Me.
St. Joseph & Western	E. Sleppy	E. Sleppy	St. Augustine, Fla.
St. Lawrence & Ottawa	Calvin Dame	Calvin Dame	So. St. Joseph, Mo.
St. Louis, Iron Mount. & So.	**O. A. Haynes	Oscar Doolittle	Prescott, Canada
Arkansas Division	L. Finlay		St. Louis, Mo.
Missouri Division	W. H. Harris	L. Finlay	Little Rock, Ark.
St. Louis, Alton & Terre Haute	**Berlah Warren		De Soto, Mo.
St. Louis, Salem & Little Rock	Thomas Everson	A. W. Grosvernor	St. Louis, Mo.
St. Louis & San Francisco	M. Kearney		Steelville, Mo.
St. Louis, Kansas City & Northern	W. H. Selby	C. S. Buck	N. Springfield, Mo.
St. Louis, Keokuk & Northwest'n	Wm. Foley		Moberly, Mo.
St. Paul & Duluth	W. McFarland	John Hill	Keokuk, Iowa.
St. Paul, Minneapolis & Manitoba	J. C. Munro	J. C. Munro	St. Paul, Minn.
St. Paul & Sioux City	F. C. Butterfield	F. C. Butterfield	Shakopee, Minn.
Sussex	E. H. Osborn	R. L. Sutton	Newton, N. J.
Syracuse, Binghamton & N. Y.	James Buchanan	James Buchanan	Syracuse, N. Y.
Syracuse, Chenango & New York	Geo. W. West		Syracuse, N. Y.

T

Tennessee & Pacific	William McKeand	William McKeand	Nashville, Tenn.
T. H. & Indianapolis { Vandalia	§§C. R. Peddle	E. D. Carter	Terre Haute, Ind.
Indianapolis Div. { Line.	Clinton Idler		Indianapolis, Ind
Vandalia Div. {	Chas. Butler		Effingham, Ill.
Logansport Division	A. J. Prescott	H. L. Clark	Logansport, Ind.
Texas & New Orleans	E. A. Campbell		Houston, Texas.
Texas & Pacific	H. J. Small	F. M. Alexander	Marshall, Texas.
Tioga & Elmira State Line	Pere Bonny	D. H. Stratton	Blossburg, Pa.
Toledo, Delphos & Burlington	Geo. H. Tier		Delphos, O.
Toledo, Peoria & Western	W. O. Hewitt	R. M. Hemphill	Peoria, Ill.
Toronto, Grey & Bruce	†David Preston		Toronto, Can.
Toronto & Nipissing	J. Haggas		Toronto, Can.
Troy & Boston	Z. B. Davis	R. V. Coon	Troy, N. Y.

Railroad.	*Master Mechanic.*	*Master Car Builder.*	*Residence.*
U			
Ulster & Delaware	J. B. Dykeman	Jno. H. Decker	Rondout, N. Y.
Union Pacific	§§L. H. Congdon	‡‡Geo. E. Stevens	Omaha, Neb.
Eastern Division		A. M. Collett	Omaha, Neb.
Eastern Division		H. J. Makely	Grand Island, Neb.
Mountain Division	T. A. Davis	John E. Davis	Cheyenne, Wy. T.
Laramie Division		Floyd Heavaner	Laramie, Wy. T.
Western Division		R. V. Brinkley	Evanston, Wy. T.
Colorado Division	James S. Scott	E. G. Thomas	Denver, Col.
Union Railway & Transit Co	H. M. Smith		Moldes, Col.
Utah Central	W. B. Armstrong	Sam. S. Tucker	St. Louis, Mo.
Utah Western	Robert Anderson		Salt Lake City.
Utica & Black River	John Bailey	David James	Salt Lake City, U.
Utica, Ithaca & Elmira	Geo. W. Cleveland	F. W. Magargil	Utica, N. Y.
			Breesport, N. Y.

V

Vicksburg & Meridian	Jas. B. Browne		Vicksburg, Miss.
Vicksburg, Shreveport & Pacific	C. H. Tull		Monroe, La.
Virginia & Truckee	I. N. Fording		Carson, Nev.
Wabash, St. Louis & Pacific	Wm. Wilson		Fort Wayne, Ind.
Wabash, St. Louis & Pacific	John C. Wills		Lafayette, Ind.
Wabash, St. Louis & Pacific	§Jacob Johann	B. B. Rose	Springfield, Ill.
Wabash, St. Louis & Pacific		U. H. Kohler	Toledo, Ohio.
Wallkill Valley	A. W. Quackenbush	Jno. H. Decker	Rondout, N. Y.
Wash. City, Va. Mid. & G. South	Jas. E. Waddey	J. T. Nalls	Alexandria, Va.
Washington & Ohio	Edward Dunn	John Harrison	Alexandria, Va.
Welland	James Taylor	Wm. H. Pay	St. Catharine, C. W.
Westchester & Philadelphia	John Moyer	Nathan Pawling	Philadelphia, Pa.
Western & Atlantic	John H. Flynn	W. G. Grambling	Atlanta, Ga.
Western Maryland	§David Holtz	J. H. Nussear	Union Bridge, Md.
Western North Carolina	Geo. W. Gates		Salisbury, N. C.
Western of Alabama	Robert King	F. M. Wade	Montgomery, Ala.
Western R. R. N. C.	Isaac W. Clark	Isaac W. Clark	Fayetteville, N. C
Western Union	John Taylor	E. A. Eddy	Rochester, Wis.
West Feliciana	J. A. Tilton	Wm. McKelvey	Laurel Hill, La.
West Jersey	W. McAllister	C. C. Williams	Camden, N. J.
White Water	§L. W. Wingert		Harrison, O.
Wilmington, Columbia & Augusta	John Bisset	W. H. Day	Florence, S. C.
Wilmington & Welden	John Bisset	C. R. Clowe	Wilmington, N. C.
Wisconsin Central	G. Campbell	J. L. Adams	Stevens P't, Wis.
Worcester & Nasbua	John G. Brady	John G. Brady	Worcester, Mass.

Directory of Railway Superintendents and Purchasing Agents

THROUGHOUT THE UNITED STATES AND CANADA.

REFERENCES.—* General Manager. † Managing Director. ‡ Assistant General Superintendent. § Assistant Superintendent. ** Superintendent of Transportation. §§ Assistant General Manager.

A

Railroad.	*Superintendent.*	*Purchasing Agent.*	*Residence.*
Adirondack	C. E. Durkee		Saratoga, N. Y.
Alabama Central	John M. Bridges		Selma, Ala.
Alabama Great Southern	Chas. P. Ball	R. W. Healey	Chattanooga, Tenn.
Albany & Susquehanna	*C. F. Young		Honesdale, Pa.
Alleghany Valley	David McCargo	John L. Awl	Pittsburg, Pa.
Anderson, Lebanon & St. Louis	Jas. A. Larnerd		Anderson, Ind.
Arkansas Midland	*A. H. Johnson		Helena, Ark.
Ashtabula & Pittsburg	D. B. McCoy		Ashtabula, O.
Atchison, Topeka & Santa Fe	*W. B. Strong	F. M. Smith	Topeka, Kan.
Western Division	Geo. B. Lake		Nickerson, Kan.
Eastern Division	D. J. Chase		Topeka, Kan.
Atchison & Nebraska	L. W. Towne		Atchison, Kan.
Atchison & Nebraska	*G. H. Nettleton	G. W. P. Atkinson	Kansas City, Mo.
Atlanta & Charlotte Air Line	*G. J. Foreacre	G. J. Foreacre	Atlanta, Ga.
Atlanta & West Point	L. P. Grant		Atlanta, Ga.
Alantic & North Carolina	Jno. Hughes, Pres.		Newbern, N. C.
Atlantic, Mississipi & Ohio		J. P. Minetree	Petersburg, Va.
Atlantic, Tennessee & Ohio	J. J. Gormley		Charlotte, N. C.

B

Baltimore & Ohio	**W. M. Clements	N. S. Hill	Baltimore, Md.
Ohio & Chicago Division	C. H. Hudson		Chicago, Ill.
Pittsburg Division	G. M. Serpell		Connellsville, Pa.
Baltimore & Potomac	Geo. C. Wilkins	A. W. Sumner	Baltimore, Md.
Bangor & Piscataquis	Arthur Brown		Bangor, Me.
Bath & Hammondsport	Geo. A. Sanders	Allen Wood	Hamm'dsp't, N. Y.
Bedford, Sp'gville, Owensb'g & Bal.	Jas. W. Kennedy	Jas. W. Kennedy	Bedford, Ind.
Bellefonte & Snow Shoe	Daniel Rhoads		Bellefonte, Pa.
Bell's Gap	Robert G. Ford		Bellwood, Pa.
Bennington & Rutland	F. C. White	F. C. White	Rutland, Vt.
Blairstown	J. D. Vail		Blairstown, N. J.
Boston, Revere Beach & Lynn	E. H. Whorf		Boston, Mass.
Boston & Albany	*Wm. Bliss		Boston, Mass.
Boston & Albany	C. O. Russell		Springfield, Mass.
Boston & New York Air Line	Jos. H. Franklin		New Haven, Conn.
Boston & Providence	A. A. Folsom	A. A. Folsom	Boston, Mass.
Boston, Concord & Montreal	*J. A. Dodge		Plymouth, N. H.
Boston, Concord & Montreal	§W. A. Stowell	J. Thomas Vose	Boston, Mass.
Boston, Hoosac Tunnel & Western	E. B. Burnham		N. Adams, Mass.
Boston & Maine	J. T. Furber	M. E. Wood	Boston, Mass.
Boston & Lowell	A. A. Hobart	F. H. Nourse	Boston, Mass.
Boston, Barre & Gardner	H. M. Witter	H. M. Witter	Worcester, Mass.
Brooklyn, Flatbush & Coney Isl'd.	W. E. Dorwin		Brooklyn, N. Y.
Brunswick & Albany	C. L. Schlotter		Brunswick, Ga.
Burlington & Mo. River (in Neb.)	*A. E. Touzalin	Geo. B. Harris	Omaha, Neb.
Burlington & Mo. River (in Neb.)	Geo. W. Holdrege	Geo. B. Harris	Omaha, Neb.
Burlington, Cedar Rapids & Nor'n	C. J. Ives	Rob't Williams	Lincoln, Neb.
Burlington & Northwestern	John F. Gerry	John F. Gerry	Cedar Rapids, Ia.
Burlington & Southwestern	J. W. Smith	J. W. Smith	Burlington, Ia.
Buffalo & Southwestern	*John F. Moulton		Burlington, Ia.
Buffalo, New York & Philadelphia	Geo. S. Gatchell	J. H. Pool	Buffalo, N. Y.
			Buffalo, N. Y.

C

Cairo & St. Louis	*L. M. Johnson	L. M. Johnson	St. Louis, Mo.
Cairo & Vincennes	Roswell Miller	T. W. Fitch	Cairo, Ill.
California Pacific & Northern	§J. A. Fillmore		Sacramento, Cal.
Camden & Atlantic	F. A. Lister	F. A. Lister	Camden, N. J.
Canada Central	T. A. McKinnon		Brockville, Can.
Canada Southern	*W. P. Taylor	A. F. Howland	St. Thomas, Ont.
U. S. Division	E. P. Murray		Toledo, O.
Canada Division	W. E. Carroll		St. Thomas, Ont.
Carbondale & Shawneetown	R. J. Cavett		Carbondale, Ill.
Carolina Central	V. Q. Johnson	C. H. Roberts	Wilmington, N. C.
Catasauqua & Fogelsville	C. W. Chapman	C. W. Chapman	Catasauqua, Pa.
Cayuga Southern	W. Stevenson		Sayre, Pa.
Cayuga & Susquehanna	W. R. Humphreys		Ithaca, N. Y.
Cazenovia, Canastota & De Ruyter	John Stebbins		Cazenovia, N. Y.
Central Pacific	*A. N. Towne		San Francisco, Cal.
Central Pacific	‡E. C. Fellows		San Francisco, Cal.
Central Pacific			Oakland, Cal.
Western & Visalia Divisions	A. D. Wilder	J. R. Watson	Sacramento, Cal.
Truckee Division	Frank Free		Wadsworth, Nev.

Railroad.	*Superintendent.*	*Purchasing Agent.*	*Residence.*
Humboldt Division	G. W. Coddington		Carlin, Nev.
Salt Lake Division	A. G. Fell		Ogden, Utah.
Sacramento & Oregon Div.	R. H. Pratt		Sacramento, Cal.
Central Vermont	J. W. Hobart		St. Albans, Vt.
Central Vermont	†J. M. Foss		St. Albans, Vt.
Western Division	John Schrier		Ogdensburg, N. Y.
Central & Southern Division			St. Albans, Vt.
Rutland Division	J. Burdett		Rutland, Vt.
New London Northern	G. W. Bentley	G. W. Bentley	New London, Conn.
Central of Georgia	Wm. Rogers	Henry Yonge	Savannah, Ga.
Atlanta Division	W. G. Raoul		Macon, Ga.
Central of Iowa	D. N. Pickering	D. N. Pickering	Marshalltown, Ia.
Central of New Jersey	James Moore	B. W. Burnet	Elizabeth, N. J.
Central Division	W. W. Stearns		Elizabeth, N. J.
Lehich & Susq. Division	W. S. Polhemus		Mauch Chunk, Pa.
Champaign, Havana & Western	A. H. Wood		Urbana, Ill.
Charlotte, Columbia & Augusta	Jno. G. Clarke		Columbia, S. C.
Chepaug	C. H. Platt	C. H. Platt	Litchfield, Conn.
Chesapeake & Ohio	W. M. S. Dunn	J. A. Netherland	Richmond, Va.
Cherawa & Darlington	R. D. Townsend		Society Hill, S. C.
Cherokee	John Postell		Atlanta, Ga.
Cheshire	R. Stewart	H. H. Stone	Keene, N. H.
Chester & Lenoir	James Mason		Chester, S. C.
Chicago & Northwestern	*Marvin Huchitt	R. W. Hamer	Chicago, Ill.
Chicago & Northwestern	§Chas. C. Wheeler		Chicago, Ill.
Wisconsin & Mill. Division	E. J. Cuyler		Chicago, Ill.
Peninsula Division	W. B. Lindsay		Escanaba, Mich.
Madison Division	C. A. Swineford		Baraboo, Wis.
Galena Division	Chas. Murray		Chicago, Ill.
Des Moines & Iowa Division	J. S. Oliver		Clinton, Iowa.
Winona & St. Peter Division	S. Sanborn		Winona, Minn.
Chicago & Alton	J. C. McMullen	A. V. Hartwell	Chicago, Ill.
Chicago & Alton	‡C. H. Chappell		Bloomington, Ill.
Chicago Division	A. M. Richards		Chicago, Ill.
St. Louis Division	T. M. Bates		Roodhouse, Ill.
Kansas City Division	J. H. Wood		Kansas City, Mo.
Chicago & Block Coal	*A. F. Beach		Veedersburg, Ind.
Chicago, Burlington & Quincy	*Thos. J. Potter	Wm. Irving	Chicago, Ill.
Chicago, Burlington & Quincy	§John D. Besler		Galesburg, Ill.
Chicago, Burlington & Quincy	§E. Ryder		Chicago, Ill.
Chicago Division	George Alexander		Chicago, Ill.
Middle, Galesb'g & Q'y Div	H. Ritchcock		Galesburg, Ill.
St. Louis & R. Isl'd Division	W. R. Crumpton		St. Louis, Mo.
Iowa Division	W. C. Perkins		Burlington, Iowa.
Chi., Clinton, Dubuque & Minn	*F. O. Wyatt	F. O. Wyatt	Dubuque, Iowa.
Chicago & Eastern Illinois	O. S. Lyford	O. S. Lyford	Chicago, Ill.
Chicago & Iowa	W. H. Holcomb		Rochelle, Ill.
Chicago & Northeastern	J. M. Turner		Lansing, Mich.
Chicago & Pacific	*J. M. Whitman	James Penny	Chicago, Ill.
Chicago & Paducah	D. H. Cocklin		Streator, Ill.
Chicago & Paducah		C. L. Rising	Chicago, Ill.
Chicago, St. Louis & New Orleans	*J. C. Clarke	J. C. Febiger, Jr.	New Orleans, La.
South Division	W. P. McKinley		McComb City, Miss.
North Division	J. G. Mann		Jackson, Tenn.
Chicago, Rock Island & Pacific	A. Kimball		Davenport, Iowa.
Chicago, Rock Island & Pacific	‡A. Manvel	A. Manvel	Chicago, Ill.
Southwestern Division	G. F. Walker		Trenton, Mo.
Iowa Division	H. F. Royce		Des Moines, Iowa
Keokuk & Des Moines Div	John Givin		Keokuk, Ia.
Chicago & West Michigan	*Geo. C. Kimball	H. Park	Muskegon, Mich.
Chicago & West Michigan	§C. M. Lawler		St. Joseph, Mich.
Chicago, Milwaukee & St. Paul	W. C. Van Horne	J. T. Crocker	Milwaukee, Wis.
Ch., LaCrosse & P. du C. Div.	H. C. Atkins		Milwaukee, Wis.
Northern Division	L. B. Rock		Milwaukee, Wis.
I. & M., & I. D. Division	C. H. Prior		Minneapolis, Minn.
Wabasha Division	J. H. Lakey		Wabasha, Minn.
Western Union Division	D. A. Nitz		Racine, Wis.
Sioux City & Dak. Div	G. E. Merchant		Sioux City, Ia.
Chicago, Pekin & Southwestern	J. Murray	C. L. Rising	Chicago, Ill.
Chicago, St. Paul & Minneapolis	E. W. Winter		Hudson, Wis.
Chicago & West Michigan	*Geo. C. Kimball	H. Park	Muskegon, Mich.
Chippewa Falls & Western	L. C. Stanley		Chip'waFalls, Wis.
Cincinnati & Eastern	George H. Wilber		Batavia, O.
Cincinnati, Wabash & Michigan	*Norman Beckley	Norman Beckley	Elkhart, Ind.
Cincinnati, Richmond & Chicago	Lewis Williams		Cincinnati, O.
Cincinnati, Rich'd & Ft. Wayne	H. C. Branham	H. C. Branham	Rockport, Ind.
Cincinnati & Terre Haute	John Holland		Terre Haute, Ind.
Cin., Cumber'd Gap & Charleston	W. J. Taylor		Knoxville, Tenn.
Cincinnati, Hamilton & Dayton	Lewis Williams	Lewis Williams	Cincinnati, O.
Cin., Hamilton & Indianapolis	Lewis Williams		Cincinnati, O.
Cincinnati, Lafayette & Chicago	J. W. Sherwood		Cincinnati, Ohio.
Cin., Sandusky & Cleveland	*D. W. C. Brown	Frank Herriman	Sandusky, O.
Cin., Sandusky & Cleveland	Chas. Howard		Sandusky, O.
Cincinnati Southern	Sam'l Woodward	C. M. Woodward	Cincinnati, O.
Cin., Indianapolis, St. Louis & Chi.	J. W. Sherwood		Indianapolis, Ind.
Cin., Indianapolis, St. Louis & Chi.		George Tozzer	Cincinnati, O.
Cleve., Col., Cin. & Indianapolis	*E. B. Thomas	J. L. Yale	Cleveland, O.
Indianapolis Division	C. U. Gale		Indianapolis, Ind
Col. and Cincinnati Divs.	Robert Bice		Cleveland, O.

Railroad.	*Superintendent.*	*Purchasing Agent.*	*Residence.*
Cleveland & Pittsburg	John Thomas		Cleveland, O.
Cleveland & Pittsburg	*J. D. Layng	Wm. Mullins	Pittsburg, Pa.
Cleveland, Mt. Vernon & Columb's	G. A. Jones		Mt. Vernon, O.
Cleve., Tuscarawas Val. & Wheel.	*Oscar Townsend		Cleveland, O.
Cobourg, Petersboro & Marmora	James R. Barber	J. R. Barber	Cobourg, Ont.
Columbus & Hocking Valley	Orland Smith		Columbus, O.
Columbus & Toledo	Orland Smith	Geo. R. Carr	Columbus, O.
Columbus & Rome	T. J. Nuckolls		Columbus, Ga.
Concord & Claremont	George E. Todd		Concord, N. H.
Concord	H. E. Chamberlin	H. E. Chamberlin	Concord, N. H.
Concord & Portsmouth	H. E. Chamberlin		Concord, N. H.
Connecticut Central	D. D. Warren, Pres		Springfield, Mass.
Connecticut River	John Mulligan	John Mulligan	Springfield, Mass.
Connecticut Valley	Samuel Babcock		Hartford, Conn.
Connecticut Western	J. F. Jones		Hartford, Conn.
Connecticut & Passumpsic Rivers	H. E. Folsom		Lyndonville, Vt.
Corning, Cowanesque & Antrim	A. H. Gorton		Corning, N. Y.
Covington, Col. & Black Hills	J. I. Booge		Sioux City, Iowa.
Cumberland Valley	J. F. Boyd	O. N. Lull	Chambersburg, Pa.
Cumberland & Pennsylvania	P. L. Burwell	P. L. Burwell	Cumberland, Md.
Cumberland & Maurice River	L. H. Dowdney		Port Norris, N. Y.

D

Danbury & Norwalk	L. W. Sandiforth		South Norwalk, Ct.
Danville & Southwestern	James A. Eads		Paris, Ill.
Davenport & Northwestern	D. Flanigan		Davenport, Ill.
Dayton, Covington & Toledo	*J. O. Arnold	C. C. Kneisly	Dayton, O.
Dayton & Michigan	J. H. Weller		Dayton, O.
Dayton & Union	C. C. Gale		Indianapolis, Ind.
Dayton & Southeastern	J. E. Gimperling, Rec	E. F. Pryor	Dayton, O.
Delaware & Chesapeake	O. S. Sanford		Easton, Md.
Delaware & Hudson Canal Co	R. Manville	J. White Sprong	Albany, N. Y.
Delaware & Hudson Canal Co	*C. F. Young		Honesdale, Pa.
Albany & Susq. Division	C. D. Hammond		Albany, N. Y.
Rensselaer & Saratoga Div	Theo. Voorhees		Troy, N. Y.
Delaware, Lackawanna & Western		G. W. B. Cushing	New York City.
Delaware, Lackawanna & Western	W. F. Hallstead		Scranton, Pa.
Bloomsburg Division	G. Bogart		Scranton, Pa.
Morris & Essex Division	Andrew Reasoner		Hoboken, N. J.
Oswego & Syracuse Division	W. H. Phelps		Oswego, N. Y.
Utica, Chenango & Sus. Div	W. G. Oakman		Scranton, Pa.
Delaware Western	David Connell		Wilmington, Del.
Denver & Rio Grande	S. R. Ainslie	S. R. Ainslie	Denver, Col.
Denver, South Park & Pacific	C. W. Fisher	Charles Wheeler	Denver, Col.
Des Moines, Adel & Western	C. N. Gilmore	C. N. Gilmore	Adel, Iowa.
Des Moines & Ft. Dodge	C. N. Gilmore		Des Moines, Ill.
Detroit & Bay City	S. R. Callaway	Allan Bourn	Detroit, Mich.
Detroit, Gr. Haven & Milwaukee	W. J. Morgan	John S. Lorimer	Detroit, Mich.
Detroit, Hillsdale & Southwestern	W. H. Parker		Ypsilanti, Mich.
Detroit, Lansing & Northern	J. B. Mulliken	Allan Bourn	Detroit, Mich.
Dorchester & Delaware	J. M. Murphy		Cambridge, Md.
Dunkirk, Allegheny Val. & Pitts	D. Thayer		Dunkirk, N. Y.
Dunkirk, Allegheny Val. & Pitts		C. V. Deforest	New York City.

E

East Broad Top	A. W. Sims		Orbisonia, Pa.
East Alabama & Cincinnati	W. W. Barnes		Opelika, Ala.
East Line & Red River	W. B. Ward		Jefferson, Tex.
East Tenn., Virginia & Georgia	**J. F. O'Brien	J. F. O'Brien	Knoxville, Tenn.
Eastern	**D. W. Sanborn	Geo. J. Fisher	Boston, Mass.
Eastern Kentucky	H. W. Bates	H. W. Bates	Riverton, Ky.
Eastern Kentucky	Geo. Noble		Riverton, Ky.
Eastern Shore	W. Thompson		Prince Anne, Md.
Erie & Pittsburg	J. N. Kimball		Erie, Pa.
Erie & Pittsburg	*J. D. Layng	Wm. Mullins	Pittsburg, Pa.
Eureka & Palisade	P. Evarts		Palisade, Nev.
European & North American	F. W. Cram		Bangor, Maine.
Evansville & Terra Haute	J. E. Martin	Jno. L. White	Evansville, Ind.
Evansville, Terra Haute & Chi	Jos. Collett	W. D. Macfarland	Terra Haute, Ind.

F

Fitchburg	John Adams	F. S. Pratt	Boston, Mass.
Vermont & Mass. Div	‡E. K. Turner		Fitchburg, Mass.
Flint & Pere Marquette	Sanford Keeler	G. G. Cook	E Saginaw, Mich.
Florida Central	W. M. Davidson	W. M. Davidson	Jacksonville, Fla.
Flushing, North Shore & Central	Samuel Spencer	Samuel Spencer	L'g Isl'd C'y, N. Y.
Fonda, Johnstown & Gloversville	L. Caten		Gloversville, N. Y.
Fon du Lac, Amboy & Peoria	A. Kinyon		Fond du Lac, Wis.
Fort Madison & Northwestern	S. B. Kenrick	S. B. Kenrick	Fort Madison, Ia.
Fort Wayne & Jackson	M. D. Woodford	H. A. Raymond	Jackson, Mich.
Fort Wayne, Muncie & Cincinnati	W. W. Worthington	& P. Ag't.	Fort Wayne, Ind.
Foxburg, St. Petersburg & Clarion	Benj. B. Newton		Frankfort, Ind.
Frankfort & Kokomo	E. Y. Comstock		Fredericton, N. B.
Fredericton	F. B. Edgecombe		Freehold, N. J.
Freehold & New York	J. E. Ralph		

G

Gal., Harrisburg & San Antonio	James Converse		Houston, Texas.
Gal., Houston & Henderson	*H. M. Hoxie	H. M. Hoxie	Palestine, Texas.
Geneva, Ithaca & Sayre	Wm. Stevenson		Sayre, Pa.
Georgia	S. K. Johnson	S. K. Johnson	Augusta, Ga.
Grand Haven	F. H. May	F. H. May	Allegan, Mich.
G. Rapids, Newaygo & L. Shore	C. Warner		G. Rapids, Mich.
Grand Rapids & Indiana	W. O. Hughart, Pres't.	W. R. Shelby	G. Rapids, Mich.
Northern Division	J. M. Mallory		G. Rapids, Mich.
Southern Division	P. S. O'Rourke		Fort Wayne, Ind.
Grand Trunk	*J. Hickson	John Taylor	Montreal, Canada.
Grand Trunk	W. J. Spicer		Montreal, Canada.
Grand Tower & Carbondale	T. M. Williamson	Wm. W. Harris	Grand Tower, Ill.
Grayville & Mattoon	*G. L. Bradbury		Mattoon, Ill.
Grayville & Mattoon	G. R. Cobleigh		Mattoon, Ill.
Great Western (Canada)	Charles Stiff		Hamilton, Ont.
Great Western (Canada)		G. R. Nash	London, Ont.
Green Bay & Minnesota	*Timothy Case		Green Bay, Wis.
Greenville & Columbia	Major R. H. Temple		Columbia, S. C.
Greenville, Col. & Birmingham	E. P. Buell		Greenville, Miss.
Greenwich & Johnsonville	H. H. Warner		Greenwich, N. Y.
Gulf, Colorado & Santa Fé	O. H. Dorrance		Galveston, Texas.
Gulf, Western Texas & Pacific	M. D. Monserrate		Cuero, Texas.

H

Hamilton & Northwestern	*F. W. Cumberland		Hamilton, Ont.
Hannibal & St. Joseph	W. R. Woodward, T. L. Dunn		Hannibal, Mo.
Hannibal & St. Joseph	W. R. Woodward		Hannibal, Mo.
Eastern Division			Kansas City, Mo.
Western Division	W. C. Alberger		Hanover, Pa.
Hanover Junction & Gettysburg	Henry A. Young		Bennington, Vt.
Harlem Extension South	*R. C. Root		Hannibal, Ill.
Havana, Rantoul & Eastern	H. E. Bullock	H. E. Bullock	Bridgeport, Conn.
Housatonic	L. B. Stillson	D. L. Draper	Houston, Texas.
Houston, East & West Texas	E. Hulbert		Houston, Texas.
Houston & Texas Central	A. H. Swanson	A. H. Swanson	Houston, Texas
Southern Division	M. G. Howe		Corsicana, Texas.
Northern Division	G. A. Quinlan		Huntingdon, Pa.
Huntingdon & Broad Top	Geo. F. Gage	S. B. Knight	

I

Illinois Central	E. T. Jeffrey	O. Ott	Chicago, Ill.
Chicago Division	C. A. Beck		Centralia, Ill.
Northern Division	J. C. Jacobs		Amboy, Ill.
Iowa Division	D. W. Parker		Dubuque, Ia.
Springfield Division	T. J. Hudson		Springfield, Ill.

Railroad.	*Superintendent.*	*Purchasing Agent.*	*Residence.*
Illinois Midland	D. K. Smith	J. G. Clifford	Paris, Ill.
Illinois & St. Louis	C. H. Sharman		St. Louis, Mo.
Indiana, Bloomington & Western	I. D. Barton	H. C. Norton	Indianapolis, Ind.
Indianapolis, Decatur & Spring.	H. S. Morse		Indianapolis, Ind.
Indianapolis & St. Louis	E. B. McClure	H. W. Comstock	Indianapolis, Ind.
Indianapolis, Peru & Chicago	§§E. C. Murphy		Indianapolis, Ind.
Indianapolis, Peru & Chicago		John Mc Kenna	Peru, Ind.
Indianapolis, Peru & Chicago	D. Pottinger	L. B. Archibald	Moncton, N. B.
Intercolonial			Truro, N. S.
Halifax & St. John Division	Jas. Coleman		Campbell't'n, N. B.
Northern Division	M. Busby		Galveston, Texas.
International & Great Northern	*H. M. Hoxie	H. M. Hoxie	Beulah, Iowa.
Iowa Eastern	H. H. Kerr		

J

Jacksonville, N. Western & S. E.	E. S. Greenleaf		Jacksonville, Ill.
Jacksonville, Pen. & Mobile	J. D. Hollister	J. D. Hollister	Tallahassee, Fla.
Jeff., Madison & Indianapolis		Wm. Mullins	Pittsburg, Pa.
Jeff., Madison & Indianapolis	*D. W. Caldwell		Columbia, Ohio.
Junction & Breakwater	Tho. Grcome		Lewes, Del.

K

Kansas Central	W. A. Martin	W. A. Martin	Leavenworth, Kan.
Kan. City, Burlington & Santa Fe	James Houston		Burlington, Kan.
Kansas City, Fort Scott & Gulf	*Geo. A. Nettleton	G. W. P. Atkinson	Kansas City, Mo.
Kansas City, Lawrence & South	*G. H. Nettleton	G. W. P. Atkinson	Kansas City, Mo.
Kan. City, St. Joseph & C. Bluffs	J. F. Barnard		St. Joseph, Mo.
Kan. City, St. Joseph & C. Bluffs	*G. H. Nettleton	G. W. P. Atkinson	Kansas City, Mo.
Kansas City & Eastern	H. Hale		Independence, Mo.
Kansas Pacific	*S. H. H. Clark	A. D. Clark	Omaha, Neb.
Kansas Pacific	S. T. Smith		Kansas City, Mo.
Kaw Valley Division	J. O. Brinkerhoff		Kansas City, Mo.
Smoky Hill Division	J. T. Odell		Ellis, Kansas.
Denver Division	J. T. Odell		Denver, Col.
Cheyenne Division	A. A. Egbert		Denver, Col.
Kent Co. & Smyrna & Del. Bay	J. F. Bingham		Chestertown, Md.
Kentucky Central	J. R. Ledyard		Covington, Ky.
Kingston & Pembroke	B. W. Folger	Wm. Harty	Kingston, Can.
Knox & Lincoln	C. A. Coombs	C. A. Coombs	Bath, Maine.
Knoxville & Ohio	G. J. Kinzel		Knoxville, Tenn.

L

Lake Erie & Western	*E. H. Waldron	E. H. Andress	Lafayette, Ind.
Eastern Division	Geo. G. Hadley		Fremont, Ohio.
Western Diuision	D. S. Hill		Lafayette, Ind.
Lake Ontario Southern	*Jas. E. Briggs		Newark, N. Y.
Lake Shore & Mich. Southern	*John Newell		Cleveland, Onio.
Lake Shore & Mich. Southern	Charles Paine	A. C. Armstrong	Cleveland, Ohio.
Buffalo & Erie Division	C. B. Couch		Cleveland, Ohio.
Toledo Div.	Thos. Flesher, Jr		Toledo, Ohio.
Michigan Division	J. E. Curtis		Detroit, Mich.
Detroit Division	P. S. Blodgett		Chicago, Ill.
Western Division	J. H. Parsons		Lansing, Mich.
Lansing Division	T. J. Charlesworth		Stoneboro, Pa.
Franklin Division	Geo. H. McIntire		Bethlehem, Pa.
Lehigh Valley	Robert H. Sayre	L. Chamberlin	Philadelphia, Pa.
Lehigh Valley			Mauch Chunk, Pa.
Beaver Meadow Division	A. G. Brodhead, Jr		Mauch Chunk, Pa.
Mahanoy Division	James I. Blaklee		Metuchen, N. J.
New Jersey Division	H. E. Packer		Wilkesbarre, Pa.
Wyoming Division	A. Mitchell		Quebec, Can.
Levis & Kennebec	W. C. Hall		East Liberty, Pa.
Ligonier Valley	Thos. A. Mellon		Little Rock, Ark.
Little Rock & Fort Smith	T. Hartman		Pine Bluff, Ark.
Little Rock, Miss. River & Texas	J. A. Woodson	J. A. Woodson	Los Angeles, Cal.
Los Angeles & Independence	§W. J. L. Moulton		L'g Isl'd C'y, N. Y.
Long Island	T. R. Sharp, Rec	R. M. Galloway	Louisville, Ky.
Louisville & Nashville	*F. de Funiak		Louisville, Ky.
Louisville & Nashville	D. W. C. Rowland	G. C. Breed	St. Louis, Mo.
St. L. & S. E. & N. & D. Div.	James Montgomery		Memphis, Tenn.
Memphis Line	J. T. Harrahon		Nashville, Tenn.
Nashville & Decatur Div	James Geddes		Birmingham, Ala.
So. & North Ala. Division	B. Dunham		Louisville, Ky.
Louisville, Cincinnati & Lexington	Wm. Mahl	Wm. Mahl	New Albany, Ind.
Louisville, New Albany & Chicago	J. MacLeod	Wm. M. Lewis	New Albany, Ind.
Louisville, N. Albany & St. Louis	E. Newland, Pres		

M

Maco n & Brunswick	Jas. M. Edwards	W. C. Jones	Macon, Ga.
Maine Central	Payson Tucker		Portland, Me.
Manchester & Keene	Charles E. Paige		Nashua, N. H.
Manchester & Lawrence	H. E. Chamberlin		Concord, N. H.
Manchester & North Weare	H. E. Chamberlin		New York, N. Y.
Manhattan Elevated		M. K. King	New York, N. Y.
Manhattan Elevated	§§Frank K. Hain		New York, N. Y.
Eastern Division	Robert Stewart		New York, N. Y.
Western Division			Cincinnati, O.
Marietta & Cincinnati	Jas. H. Stewart	J. H. Stewart	Marietta, O.
Marietta, Pittsburg & Cleveland	S. C. Baldwin	R. B. Hoover	Marquette, Mich.
Marquette, Hought'n & Ontonag'n	*Samuel Schoch		Smethport, Pa.
McKean & Buffalo	*S. V. Godden		Memphis, Tenn.
Memphis & Little Rock	*Rudolph Fink		Huntsville, Ala.
Memphis & Little Rock	W. E. Smith		Paducah, Ky.
Memphis & Charleston	John A. Grant	John A. Grant	Romeo, Mich.
Memphis, Paducah & Northern	*N. Monsarrat	N. Monserrat	Detroit, Mich.
Michigan Air Line	*M. S. Hadley		Jackson, Mich.
Michigan Central	*H. B. Ledyard	Allan Bourn	Bay City, Mich.
Michigan Central	*E. C. Brown		Jach on, Mich.
Mackinaw & Saginaw Div	W. A. Vaughan		Middleburg, N. Y.
Main Line & G. R. & Kal. Div's	C. B. Bush		[Thompson, Ridge, N. Y.
Middleburg & Schoharie	P. S. Demforth		Port Hope, Ont.
Middletown & Crawford	D. Thompson		Milwaukee, Wis.
Midland Railway of Canada	H. G. Taylor		Mineral Point, Wis.
Milwaukee, Lake Shore & West'n	H. G. H. Reed		Hancock, Mich.
Mineral Point	G. W. Cobb	G. W. Cobb	Minneapolis, Minn.
Mineral Range	*C. E. Holland		Minneapolis, Minn.
Minneapolis & St. Louis	*Chas. F. Hatch	Chas. F. Hatch	Wabasha, Minn.
Minneapolis & St. Louis	E. W. Gaylord	E. W. Gaylord	Memphis, Tenn.
Minnesota Midland	J. H. Lakey		Alexandria, Mo.
Mississippi & Tennessee	M. Burke	M. Burke	Sedalia, Mo.
Missouri, Iowa & Nebraska	Col. Henry Hill	J. Pfaffleny	Sedalia, Mo.
Missouri, Kansas & Texas	*Abram Mitchell	G. M. Babcock	Sedalia, Mo.
Sedalia, Ft. S. & Neosho Div	L. Pearson		Denison, Tex.
Cherokee & Choctaw Div	E. Harding		Hannibal, Mo.
Missouri Division	Geo. H. Huntington		Sedalia, Mo.
Fort Scott Division	L. Pearson		St. Louis, Mo.
Missouri Pacific	A. A. Talmage	R. B. Lyle	St. Louis, Mo.
Missouri Pacific	‡A. W. Dickinson		St. Louis, Mo.
Eastern Division	Miller Bullard		St. Louis, Mo.
Central Branch Division	W. W. Fagan		Mobile, Ala.
Mobile & Alabama Grand Trunk	F. B. Clark, Prest		Mobile, Ala.
Mobile & Ohio	*A. L. Rives	A. L. Rives	Jackson, Tenn.
Northern Division	E. S. Hosford		Mobile, Ala.
Southern Division	C. Fleming		Columbus, Ga.
Mobile & Girard	W. L. Clark		Montgomery, Ala.
Mobile & Montgomery	B. Dunha		Mont Alto, Pa.
Mont Alto	G. B. Weistling		Macon, Ga.
Montgomery & Eufaula	W. G. Raoul		Montpelier, Vt.
Montpelier & Wells River	W. A. Stowell		Mauch Chunk, Pa.
Montrose	J. I. Blakslee	J. I. Blakeslee	New Orleans, La.
Morgan's Louisiana & Texas	Geo. Pandeley	C. A. Whitney & Co.	Hughesville, Pa.
Muncy Creek	H. R. Mehrling		

Railroad.	Superintendent.	Purchasing Agent.	Residence.
N			
Nashua, Acton & Boston	H. E. Chamberlin		Concord, N. H
Nashua & Lowell	Chas. E. Paige	Chas. E. Paige	Nashua, N. H.
Nashville, Chattanooga & St. Louis	J. C. Wrenne		Nashville, Tenn.
Natchez, Jackson & Columbus	J. H. Fitzpatrick		Natchez, Miss.
Naugatuck	Geo. W. Beach	Geo. W. Beach	Waterbury, Conn.
Nebraska	Wm. Irving		Omaha, Neb.
Newburg, Dutchess & Connecticut	C. L. Kimball	C. L. Kimball	Dutchess J'n, N.Y.
New Brunswick & Canada	John Stewart		St. Stephen, N. B.
New Brunswick	Tho. Hoben	T. Hurpee	Gibson, N. B.
New Canaan	Wm. St. John		New Canaan, Conn.
New Castle & Franklin	A. Vandivort		New Castle, Pa.
New Haven & Derby	E. S. Quintard		New Haven, Conn.
New Haven & Northampton	C. N. Yeamans	C. N. Yeamans	New Haven, Conn.
New Jersey & New York	J. D. Hasbrouck		Jersey City, N. J.
New Jersey Midland	W. E. Lewis		Jersey City, N. J.
New Jersey Southern	W. S. Sneden		119 Lib. st., N. Y.
New Orleans & Selma	T. H. Du Puy		Selma, Ala.
New Orleans & Mobile	D. B. Robinson	John J. Howell	New Orleans, La.
New York, Lake Erie & Western	*Robert Harris		New York, N. Y.
New York, Lake Erie & Western	E. S. Bowen	J. A. Hardenbergh	New York, N. Y.
New York, Lake Erie & Western	T. O. Chaunte		New York, N. Y.
New York, Lake Erie & Western	**P. P. Wright		Jersey City, N. J.
Eastern Division	E. O. Hill		Port Jervis, N. Y.
Delaware Division	Benj. Thomas		Port Jervis, N. Y.
Susquehanna Division	R. B. Cable		Elmira, N. Y.
Buffalo & Rochester Div	R. G. Taylor		Buffalo, N. Y.
Western Division	J. S. Beggs		Dunkirk N. Y.
New York & Harlem	Chas. M. Bissell	R. C. Moore	New York, N. Y.
New York & Greenwood Lake	C. W. Douglas	C. W. Douglas	Jersey City, N. J.
New York, New Haven & Hartford	E. M. Reed	R. N. Dowd	New Haven, Conn.
N. Y. & N. H. Division	John T. Moody		New York, N. Y.
Hartford Division	C. S. Davidson		Hartford, Conn.
Shore Line Division	W. H. Stevenson		New Haven, Conn.
New York Central & Hudson Riv			
Hudson River & Harlem Div	J. M. Toucey	C. V. DeForest	New York, N. Y.
Eastern Division	Zenas C. Priest		Utica, N. Y.
Western Division	Geo. H. Burrows		Rochester, N. Y.
New York Central Division	Jas. Tillinghast		Albany, N. Y.
New York & Manhattan Beach			New York, N. Y.
New York & New England	*Jas. H. Wilson	W. W. McKim	Boston, Mass.
Eastern Division	H. M. Britton		Boston, Mass.
Norwich Division	P. St. M. Andrews		Norwich, Conn.
Western Division	J. F. McManus		Hartford, Conn.
New York, Ontario & Western	*Theo. Houston		New York, N. Y.
Northern Division	C. W. Lanpher		Norwich, N. Y.
Southern Division	A. H. Danforth		Middletown, N. Y.
New York, Penn. & Ohio	P. D. Cooper		Cleveland, O.
New York, Penn. & Ohio		J. H. Holway	Meadville, Pa.
First & Second Divisions	A. L. Dunbar		Meadville, Pa.
Third and Fourth Divisions	T. A. Phillips		Galion, O.
Mahoning Division	J. M. Ferris		Cleveland, O.
Northern Pacific	*H. C. Sargent	E. T. Williams	St. Paul, Minn.
Northern Pacific	H. A. Towne		Brainerd, Minn.
Pacific & P. Oreille Div	J. W. Sprague	J. W. Sprague	New Tacoma, W. T.
Northern of Canada	*F. W. Cumberland		Toronto, Can.
North Carolina	See Piedmont Air Line.		
Northern Central	*Frank Thomson		Philadelphia, Pa.
Northern Central		A. W. Sumner	Baltimore, Md.
Baltimore Division	G. C. Wilkins		Baltimore, Md.
Elmira & Canandaigua Div	R. Neilson		Elmira, N. Y.
Susquehanna Division	W. A. Baldwin		Williamsport, Pa.
Northern (New Hampshire)	George F. Todd		Concord, N. H.
Northeastern (Georgia)			Athens, Ga.
Northeastern (South Carolina)	A. F. Ravenel		Charleston, S. C.
North Pacific Coast	*John Dorherty	W. F. Russell	San Francisco, Cal.
Northwestern Ohio	J. S. Morris		Toledo, O.
Northwestern Grand Trunk	Henry Funnell		Battle Creek, Mich.
Northwestern Grand Trunk		N. Wall	Port Huron, Mich.
O			
Ogdensburg & Lake Champlain	W. W. Hungerford		Ogdensburg, N. Y.
Ohio Central	P. Pease		Columbus, O.
Ohio & Mississippi	W. W. Peabody		Cincinnati, O.
Ohio & Mississippi		G. E. Atwood	St. Louis, Mo.
Eastern Division	C. B. Cole		Seymour, Ind.
Western Division	C. M. Stanton		St. Louis, Mo.
Louisville Division	C. Cole		Louisville, Ky.
Ohio & Toledo	N. A. Smith		Carrollton, O.
Old Colony	J. R. Kendrick	F. P. Moseley	Boston, Mass.
Northern Division	§S. A. Webber		Fitchburg, Mass.
Cape Cod Division	§C. H. Nye		Hyannis Mass.
Main Line Division	§J. H. French		Boston, Mass.
Olean, Bradford & Warren	J. W. Watson		Oleon, N. Y.
Omaha & Republican Valley	P. J. Nichols		Omaha, Neb.
Omaha & Northern Nebraska	J. E. House		Omaha, Neb.
Oregon & California	J. Brandt, Jr.	J. Brandt, Jr.	Portland, Oregon.
Oregon Railway & Navigation Co.	G. J. Ainsworth		Portland, Oregon.
Owensboro & Nasaville	E. Culverhouse		Owensboro, Ky.
P			
Paducah & Elizabethtown	Robert Meek		Elizabethtown, Ky.
Painesville & Youngstown	**J. A. Newcome		Youngstown, O.
Panama			Aspinwall, U. S. C.
Parker & Karns City	W. C. Moberly		Parker City, Pa.
Peach Bottom	S. M. Manifold		York, Pa.
Paw Paw & Toledo & South Haven	John Bunz		Lawton, Mich.
Pennsylvania	*Frank Thomson	Enoch Lewis	Philadelphia, Pa.
Pennsylvania	Charles E. Pugh		Altoona, Pa.
Pennsylvania	**John Reilly		Altoona, Pa.
New York Division	James McCrea		Jersey City, N. J.
Amboy Division	I. S. Buckelew		Camden, N. J.
Belvidere Division	J. A. Anderson		Lambertville, N. J.
New Jersey Division	F. Wolcott Jackson		Jersey City, N. J.
Philadelphia Division	W. F. Lockard		Philadelphia, Pa.
Middle Division	S. M. Prevost		Harrisburg, Pa.
Pittsburg Division	Robert Pitcairn		Pittsburg, Pa.
Tyrone Division	S. S. Blair		Tyrone, Pa.
Bedford Division			Harrisburg, Pa.
West Pennsylvania Division	E. B. Taylor		Allegheny City, Pa.
Lewistown Division	J. H. Hutchinson		Lewistown, Pa.
Pensacola	W. D. Chipley		Pensacola, Fla.
Pensacola & Selma	W. D. Chipley		Pensacola, Fla.
Peoria, Decatur & Evansville	G. R. Cobleigh	G. R. Cobleigh	Pekin, Ill.
Peoria, Pekin & Jacksonville	*Geo. Skinner	Geo. Skinner	Peoria, Ill.
Peoria & Springfield	J. R. Hilliard		Peoria, Ill.
Petersburg	R. Sully	L. E. Clark	Petersburg, Va.
Philadelphia & Atlantic City	Ellis Clark	Ellis Clark	Philadelphia, Pa.
Philadelphia & Reading	*J. E. Wootten	W. S. Wilson	Philadelphia, Pa.
Catawissa & Williamsport Br.	D. C. Reinhart		Williamsport, Pa.
Reading & Columbia	Alex. M. Wilson		Columbia, Pa.
Lebanon & Tremont	H. W. Tracy		Pine Grove, Pa.
N. Penn. & B. Brook Div'n.	E. A. Sweigard		Philadelphia, Pa.
Philadelphia & Baltimore Central	Henry Wood	Henry Wood	Philadelphia, Pa.
Philadelphia & Erie	Wm. A. Baldwin		Williamsport, Pa.
Philadelphia & Erie		Enoch Lewis	Philadelphia, Pa.
Western Division	J. W. Reynolds		Erie, Pa.
Middle Division	E. B. Westfall		Renovo, Pa.
Eastern Division	Thomas Gucker		Williamsport, Pa.
Danv., Haz. & W. Barre Div	Joseph Crawford		Sunbury, Pa.
Philadelphia, Wilmington & Balt.	H. F. Kenney		Philadelphia, Pa.
Philadelphia, Newt'n & New York	L. L. Bush		Philadelphia, Pa.

Railroad.	Superintendent.	Purchasing Agent.	Residence.
Piedmont Air-Line	T. M. R. Talcott	R. H. Duesberry	Richmond, Va.
Richmond & Danville Div	W. A. Green		Richmond, Va.
North Carolina Division	A. B. Andrews		Raleigh, N. C.
Pine River Valley & Steuens Pt.	W. L. James		Richl'nd Cent., Wis.
Pittsburg & Castle Shannon	A. C. Hays		Pittsburg, Pa.
Pittsburg & Lake Erie	R. W. Jones		Pittsburg, Pa.
Pittsburg, Cincinnati & St. Louis	S. M. Felton, Jr.	William Mullins	Pittsburg, Pa.
Pittsburg, Cincinnati & St. Louis	*D. W. Caldwell		Columbus, O.
Pitts., Cin. & St. Louis Div	J. H. Barrett		Pittsburg, Pa.
Col., Cin. & Ind., Cent. Div	J. Hill		Logansport, Ind.
Col., Cin. & Ind., Cent. Div	J. F. Miller		Richmond, Ind.
Indianap. & Vincennes Div	E. W. McKenna		Indianapolis, Ind.
Cincin. & Musk. Valley Div	C. C. Waite		Zanesville, O.
Little Miami Div	J. D. Ellison		Cincinnati, O.
Pittsburg, Ft. Wayne & Chicago	*J. D. Layng	William Mullins	Pittsburg, Pa.
Pittsburg, Ft. Wayne & Chicago	C. E. Gorham		Chicago, Ill.
Eastern Division	George S. Griscom		Pittsburg, Pa.
Western Division	C. D. Gorham		Fort Wayne, Ind.
Pittsburg & Western	G. A. Woerth		Harmony, Pa.
Pittsburg, Titusville & Buffalo	Tho. H. Wilson		60 Clty, Pa.
Pittsburg, Titusville & Buffalo		John L. Awl	Pittsburg, Pa.
Pittsburg, Virginia & Charleston	J. M. Byers		Pittsburg, Pa.
Port Dover & Lake Huron	A. B. Atwater		Woodstock, Ont.
Port Royal & Augusta	R. G. Fleming		Fort Royal, S. C.
Portland & Ogdensburg	Jonas Hamilton	Jonas Hamilton	Portland, Me.
Portland & Rochester	J. M. Lunt	J. M. Lunt	Portland, Me.
Potomac, Fredericksb'h & Pied't	Charles Kennedy		Fredericksb'h, Va.
Poughkepsie, Hartford & Boston	J. A. Perkins	A. W. Cable	Poughkeepsie, N.Y.
Prince Edward Island	Alex. McNabb	Alex. McNabb	Charlotte'n, P.E.I.
Prospect Park & Coney Island	R. Schermerhorn		Coney Island, N.Y.
Providence & Springfield	William Tinkham	William Tinkham	Providence, R. I.
Providence & Worcester	W. E. Chamberlain		Providence, R. I.
Providence, Warren & Bristol	Waterman Stone		Providence, R. I.
Q			
Quebec, Mont., Ott'a & Occidental	C. A. Scott	Jas. Macpherson	Montreal, Can.
Quebec Central	§A. Steele		Sherbrooke, Can.
Queen Anne & Kent County	P. H. Irwin		Centreville, Md.
Quincy, Missouri & Pacific	F. D. Schermerhorn		Quincy, Ill.
R			
Raleigh & Augusta Air-Line	J. C. Winder		Raleigh, N. C.
Raleigh & Gaston	J. C. Winder		Raleigh, N. C.
Rhinebeck & Connecticut	H. H. Jones		Rondout, N. Y.
Richmond, York Riv. & Chesap'ke	H. T. Douglas	B. S. Crouch	Richmond, Va.
Richmond & Danville	(See Piedmont Air-Line).		
Richmond, Fredericksb'h & Potomac	E. T. D. Myers	T. L. Courtney	Richmond, Va.
Richmond & Petersburg	Theo. D. Kline		Richmond, Va.
Rio Grande	*M. J. Gomila		Brownsville, Tex.
Rochester & State Line	J. E. Childs	J. E. Childs	Rochester, N. Y.
Rockwood & Tennessee River	H. Clay Evans		Rockwood, Tenn.
Rock Island & Mercer County	*R. R. Cable		Rock Island, Ill.
Rock Island & Peoria	R. R. Cable	R. R. Cable	Rock Island, Ill.
Rome	Eben Hillyer		Rome, Ga.
Rome, Watertown & Ogdensburg	E. A. Van Horne		Watertown, N. Y.
Rome, Watertown & Ogdensburg		G. W. B. Cushing	New York City.
Rumford & Buckfield	O. Hayford		Canton, Me.
S			
Scioto Valley	*H. L. Morrill	H. L. Morrill	Columbus, O.
Scioto Valley	J. R. Peters		Columbus, O.
St. Croix & Penobscot	Wallace Haycock		Milltown, Me.
St. Lawrence & Ottawa	*Tho. Reynolds	Tho. Reynolds	Ottawa, Can.
St. Johns	R. McLaughlin		St. Augustine, Fla.
St. Johns & Indian River	W. H. Churchill		Titusville, Fla.
St. John & Maine	H. D. McLeod		St. John, N. B.
St. Joseph & Western	L. D. Tuthill		St. Joseph, Mo.
St. Joseph & Western		A. D. Clarke	Omaha, Neb.
St. Louis, Alton & Terre Haute	Beriah Warren	Beriah Warren	St. Louis, Mo.
St. Louis, Hannibal & Keokuk	W. W. Walker		Hannibal, Mo.
St. Louis, Iron Mountain & South.	Arthur W. Soper	W. S. Cuddy	St. Louis, Mo.
Texas Division	J. W. Brown		Texarkana, Texas
St. Louis & San Francisco	*C. W. Rogers	C. W. Rogers	St. Louis, Mo.
Kansas Division	W. A. Thoms		Oswego, Kan.
St. Louis, Keokuk & Northwest'n	A. L. Griffin	John A. Blood	Keokuk, Ia.
St. Louis, Salem & Little Rock	E. B. Sankey		Salem, Mo.
St. Louis, Salem & Little Rock		H. A. Crawford	St. Louis, Mo.
St. Paul & Duluth	Geo. H. Smith		St. Paul, Minn.
St. Paul, Minneapolis & Manitoba	*Jas. J. Hill	J. C. Morrison	St. Paul, Minn.
St. Paul, Minneapolis & Manitoba	E. B. Wakeman		St. Paul, Minn.
St. Paul & Sioux City	F. Lincoln	J. F. Lincoln	St. Paul, Minn.
St. Paul, Stillwater & Taylor's Falls	A. B. Stickney		St. Paul, Minn.
Sacramento & Placerville	Josiah Johnson		Sacramento, Cal.
Saginaw Valley & St. Louis	N. W. Merrill	N. W. Merrill	Saginaw, Mich.
San Francisco & North Pacific	*A. Hughes	A. Hughes	San Francisco, Cal.
San Francisco & North Pacific	A. A. Bean	P. E. Dougherty	Petaluma, Cal.
San Rafael & San Quentin	David Nye		San Rafael, Cal.
Savannah, Florida & Western	*H. S. Haines	W. R. McKee	Savannah, Ga.
Savannah & Charleston	C. S. Gadsden		Charleston, S. C.
Savannah & Memphis	W. S. Greene	W. S. Greene	Opelika, Ala.
Seaboard & Roanoke	J. M. Robinson	J. A. Walton	Baltimore, Md.
Selma & Greensboro	E. W. Rucker	E. W. Rucker	Marion, Ala.
Selma, Rome & Dalton	Norman Webb	Norman Webb	Selma, Ala.
Sheboygan & Fond du Lac	E. J. Duyfjes		Fond du Lac, Wis.
Shenango & Allegheny	J. T. Blair		Greenville, Pa.
Shepaug	C. H. Platt		Litchfield, Conn.
Sioux City & Pacific	F. C. Hills		Missouri Valley, Ia.
Sioux City & Pacific	*P. E. Hall	P. E. Hall	Cedar Rapids, Ia.
Skaneateles	J. McNamara		Skaneateles, N. Y.
South Carolina	John F. Peck	S. B. Pickens	Charleston, S. C.
Southeastern of Canada	H. A. Alden		Newport, Vt.
Southern Central	Jas. G. Knapp		Auburn, N. Y.
Southern Minnesota	J. M. Egan	J. M. Egan	La Crosse, Wis.
Mankato Division			Mankato, Minn.
South Mountain	W. H. Woodward		Pine Grove Furnace, Pa.
Southern Pacific	A. C. Bassett	John R. Watson	San Francisco, Cal.
Los Angeles & Yuma Div	§E. E. Hewitt		Los Angeles, Cal.
Tulare Division	E. C. Fellows		Oakland, Cal.
South Pacific Coast	Thomas Carter	DeLancey Stone	San Francisco, Cal.
Southwestern of Georgia	W. G. Raoul		Macon, Ga.
Southwestern of Kentucky	M. Tabler		Harrodsburg, Ky.
Spartanburg, Union & Columbia	Jas. Anderson	Jas. Anderson	Spartanburg, S. C.
Spartanburg & Asheville	Jas. Anderson	Jas. Anderson	Spartanburg, S. C.
Springfield, Athol & Northeastern	John W. Phelps		Springfield, Mass.
Springfield & Northwestern	*Geo. N. Black	J. A. Williams	Springfield, Ill.
Springfield Southern	Wm. Thornburg	G. A. Barnes	Springfield, O.
Springfield & Western Missouri	T. F. Oakes		Kansas City, Mo.
Springfield & Parsboro	J. A. Killam		Parsboro, N. S.
State Lane & Sullivan	J. O. Blight		Towanda, Pa.
Staten Island	John W. Wilber		Tottenville, N. Y.
Sterling Mountain	J. C. Missimer		Sloatsburg, N. Y.
Stonington & Providence	J. B. Gardiner		Providence, R. I.
Stonington & Providence		Giles F. Ward	Stonington, Conn.
Summit Branch	R. C. Peebles		Lykens, Pa.
Summit County	W. M. Riter		Coalville, Utah.
Sussex	E. C. Case	E. C. Case	Newtown, N. J.
Syracuse, Binghamton & N. Y.	W. K. Niver		Syracuse, N. Y.
Syracuse, Binghamton & N. Y.		G. W. B. Cushing	New York, N. Y.
Syracuse, Chenango & New York	A. C. Belden		Syracuse, N. Y.
Syracuse, Geneva & Corning	A. H. Gorton		Corning, N. Y.

Railroad.	*Superintendent.*	*Purchasing Agent.*	*Residence.*
T			
Tennessee & Pacific	J. W. Thomas		Nashville, Tenn.
Terre Haute & Ind'apolis } Van- {	*John E. Simpson		St. Louis, Mo.
Terre Haute & Ind'apolis } dalia {	Joshua Staples		Indianapolis, Ind.
Terre Haute & Ind'apolis } Line. {		C. R. Peddle	Terre Haute, Ind.
Logansport Division			Logansport, Ind.
Terre Haute & Southeastern	George Atherton		Terre Haute, Ind.
Texas & New Orleans	C. A. Burton	P. B. Watson	Houston, Tex.
Texas & Pacific	Geo. Noble	Geo. Noble	Marshall, Tex.
Jefferson Division	J. S. Noble		Texarkana, Tex.
Southern Division	C. Harris		Marshall, Tex.
Texas Western	J. W. Goodwin		Houston, Tex.
Tioga & Elmira State Line	L. H. Shattuck		Blossburg, Pa.
Toledo, Delphos & Burlington	I. H. Burgoon		Delphos, O.
Toledo & Ann Arbor	J. S. Morris		Ann Arbor, Mich.
Toledo, Peoria & Western	W. F. Merrill	W. F. Merrill	Peoria, Ill.
Troy & Boston	E. E. Aldrich	D. Robinson	Troy, N. Y.
Toronto, Grey & Bruce	*Edmund Wragge	W. Watson	Toronto, Can.
Toronto & Nipissing	John Duncan	John Symons	Toronto, Can.
Tuckerton	J. J. Pharo	J. C. Ridgeway	Tuckerton, N. J.
U			
Ulster & Delaware	Geo. Covkendall		Rondout, N. Y.
Union Pacific	*S. H. H. Clarke	A. D. Clark	Omaha, Neb.
Union Pacific	*Jas. T. Clarke		Omaha, Neb.
Eastern Division	P. J. Nichols		Omaha, Neb.
Western Division	W. B. Doddridge		Evanston, Wy. T.
Mountain Division	Robert Law		Cheyenne, Wy. T.
Laramie Division	Edw. Dickinson		Laramie, Wy. T.
Colorado Division	A. A. Egbert		Denver, Col.
Union Railway & Transit Co	J. B. Van Dyne	E. J. Williams, Jr	St. Louis, Mo.
Union R. R. Trans. & S. Yard Co	*M. A. Downing	**Albert Scott	Indianapolis, Ind.
Utah Central	John Sharp	S. H. Hill	Salt Lake City.
Utah Northern	Geo. W. Thatcher		Logan, Utah.
Utah Western	*W. W. Riter	W. W. Riter	Salt Lake City.
Utica & Black River	J. F. Maynard		Utica, N. Y.
Utica, Ithaca & Elmira	Geo. J. Rice	J. L. Greatsinger	Horse Heads, N. Y
V			
Vicksburg & Brunswick	W. G. Raoul		Macon, Ga.
Vermont Valley	John Mulligan		Springfield, Mass.
Vicksburg & Meridian	E. F. Raworth	E. F. Raworth	Vicksburg, Miss.
Vicksburg, Shreveport & Pacific	*J. W. Green	J. W. Green	Monroe, La.
Virginia & Truckee	H. M. Yerington	C. P. Mason	Carson, Nev.
W			
Wabash, St. Louis & Pacific	*John C. Gault		St. Louis, Mo.
Eastern Division	R. Andrews		Toledo, O.
Western Division	Thos. McKissock	R. W. Green	St. Louis, Mo.
Illinois Division	H. F. Clark		Springfield, Ill.
Ohio & Indiana Division	K. H. Wade		Fort Wayne, Ind.
Wabash, Chester & Western	J. L. Hinkley		Chester, Ill.
Wallkill Valley	J. H. Jones		Rondout, N. Y.
Washington & Ohio	R. H. Havener	Lewis McKenzie	Alexandria, Va.
Wash. City, Va. Mid. & G. South'n	Peyton Randolph		Alexandria, Va.
Waukon & Mississippt	F. O. Wyatt		Dubuque, Ia.
Waynesburg & Washington	Jacob Swart		Waynesburg, Pa.
Welland	William Pay		St. Catherine, Ont.
Westchester & Philadelphia	Henry K. Smith	J. J. Bryant	Philadelphia, Pa.
West Feliciana	J. B. McGehee		Laurel Hill, La.
West Jersey	W. J. Sewell		Camden, N. J.
Western of Alabama	*Cecil Gabbett	Cecil Gabbett	Montgomery, Ala.
Western of North Carolina	L. C. Jones		Fayetteville, N. C.
Western & Atlantic	Wm. McRae	W. R. Webster	Atlanta, Ga.
Western Maryland	*J. M. Hood		Baltimore, Md.
Western North Carolina	J. W. Wilson	J. W. Wilson	Morganton, N. C.
Whitewater	W. W. Worthington		Ft. Wayne, Ind.
Whitby, Port Perry & Lindsay	Jas. Holden		Whitby, Ont.
Wicomoco & Pocomoke	H. H. Pitts		Berlin, Md.
Williamstown	J. F. Bodine		Williamstown, N.J.
Wilmington, Columbia & Augusta	J. F. Divine	J. F. Divine	Wilmington, N. C.
Wilmington & Northern	J. H. Thompson		Coatesville, Pa.
Wilmington & Weldon	J. F. Divine	J. F. Divine	Wilmington, N. C.
Windsor & Annapolis	*P. Innes		Kentville, N. S.
Wisconsin Central	*F. N. Finney	J. W. Curtiss	Milwaukee, Wis.
Mil. & Eastern Div	C. F. Dutton		Milwaukee, Wis.
So. Mid. & Northern	G. Campbell		Steven's Point, Wis.
Wisconsin Valley	F. O. Wyatt		Tomah, Wis.
Woodstock	J. G. Porter		Woodstock, Vt.
Worcester & Nashua	C. S. Turner	C. S. Turner	Worcester, Mass.
Worcester & Shrewsbury	J. F. Bigelow		Worcester, Mass.
Worcester & Somerset	F. J. Palater		Philadelphia, Pa.
Y			
Youghiogheny	Wm. Wilson		Irwin's, Pa.